

# CHICHAQUA BOTTOMS GREENBELT

## MASTER PLAN

**DRAFT**





## ACKNOWLEDGMENTS

WE WOULD LIKE TO THANK THE MEMBERS OF THE CHICHAQUA BOTTOMS GREENBELT MASTER PLAN STEERING COMMITTEE AND POLK COUNTY CONSERVATION STAFF.

WE WOULD LIKE TO THANK MEMBERS OF THE PUBLIC WHO PARTICIPATED IN FOCUS GROUPS, INTERVIEWS, AND ATTENDED WORKSHOPS AND PUBLIC MEETINGS IN SUPPORT OF THIS PLANNING EFFORT.

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*Chichaqua Bottoms Greenbelt Master Plan helps guide investments for Chichaqua’s future but it must not be confused with an ecological/management plan. The development of a management plan is the top recommendation of this document as ecological restoration has been and will continue to be the driving force at Chichaqua – far into the future. We have worked here to identify facilities and activities at Chichaqua that should prove compatible to its ecological restoration mission. At all times, that mission comes first. If at any point recommendations made here compromise that mission, they should be disregarded or adapted to fit.*

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# EXECUTIVE SUMMARY

## INTRODUCTION

This Master Plan for Chichaqua Bottoms Greenbelt (Chichaqua) provides a clear vision for this dynamic corner of Northeast Polk County. This document is intended for use with an ecology/management plan for Chichaqua (see priority recommendation), that will underpin all decision-making. Every effort has been made to anticipate facilities and activities at Chichaqua that will be compatible with ecological management, but if in conflict, ecology comes first.

The year-long planning process began in June 2013. Due to administrative changes, the Plan was put on hold, with the Final Plan produced Fall 2015. The Plan has involved the public, Polk County Conservation Board staff and consultants and a Chichaqua Planning Advisory Committee (representing diverse federal, state and local agencies, as well as private interest groups). Staff and the public have been engaged through public workshops, working sessions and/or ongoing meetings.

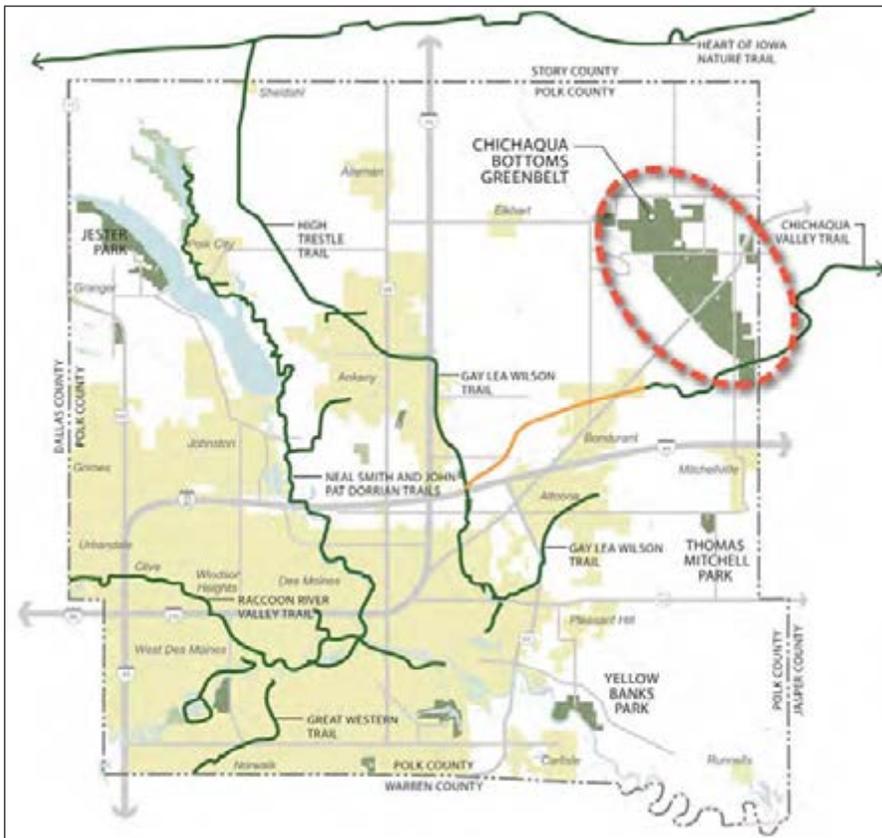


FIGURE 0.1  
Location of Chichaqua in Polk County

## PROGRAM INITIATIVES/RECOMMENDATIONS

### THIS MASTER PLAN RECOMMENDS THE FOLLOWING INITIATIVES:

- Ecology/Management Plan—note this is recommended as the top priority for Chichaqua
- Ongoing land protection through buffering and in-fill
- Interpretive/Education Plan
- Way-finding and Signage Plan

### SEVERAL SIGNIFICANT IMPROVEMENTS ARE RECOMMENDED IN THE MASTER PLAN. THE HIGHLIGHTS INCLUDE:

- Establish Welcome Portal including Chichaqua Station, a primary education center, which will accommodate education, ongoing scientific research, and an introduction to Chichaqua
- Dispersed Education Hubs—locations in the landscape, dispersed throughout Chichaqua, again supporting education and research
- Bike Oasis—a new connection to the existing multi-use trail, offering an additional entry portal to Chichaqua
- Improved and expanded pathways for the public, e.g., water and nature trails, multi-use paths, including a back-country challenge trail
- Improved traffic routing, control and road modifications/access, supporting continuous habitat
- Improved, distributed parking options allowing for personal access
- Lodging to support unique experiential camping
- Moving structures out of the flood plain or building in flood resilience, i.e., adapting to life in the floodplain
- Welcome Information Hubs to welcome the public to Chichaqua, provide orientation and support way-finding
- Improved youth camping opportunities

Additionally, this plan recommends a new era of partnership, protection, and connections for Chichaqua through a series of strategies appearing in this plan.

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## HYDROLOGY AND WATER MANAGEMENT:

Improve water quality and manage quantity, in order to enhance the ecological and recreational value of Chichaqua's hydrologic systems.

- Partner with landowners in at least one sub-watershed to implement best management practices and demonstrate the effectiveness of responsible water management.
- Without negatively impacting upstream landowners, seek opportunities to restore the flow of water through historic Skunk River meanders and oxbows.
- Improve ecological function, reduce sediment transport, and stabilize erosion in upland draws.
- Create new resources of permanent deep-water habitat.
- Establish a water quality monitoring program to demonstrate the efficacy of Chichaqua's water management methods.
- Restore natural hydrology on future acquired lands through the breaking of existing drain tile networks and removal of ditches, where practically and legally feasible.
- Acquire properties when available, to create additional hydrologic connections and further opportunities for wetland habitat.



FIGURE 0.2  
The watershed of the Southern Skunk River

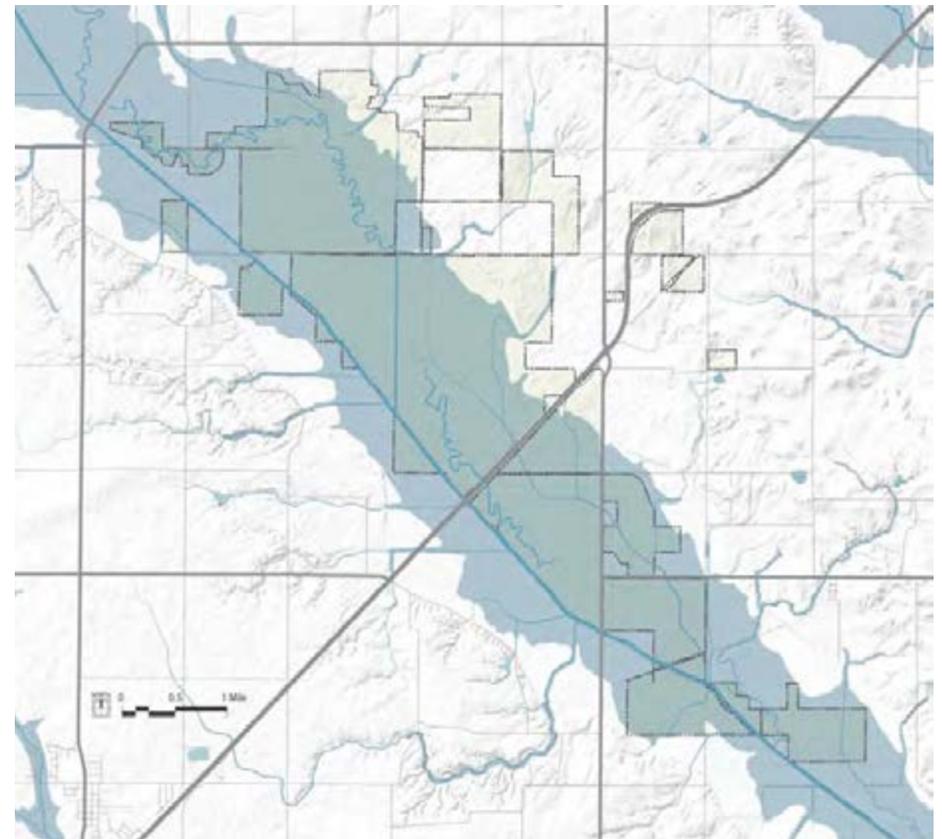


FIGURE 0.3  
The 100-year floodplain

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## OVERVIEW AND OWNERSHIP

The Chichaqua Bottoms Greenbelt (Chichaqua) is located in northeastern Polk County, 10 miles from the corporate limits of the City of Des Moines and two miles from the corporate limits of the City of Bondurant. From Des Moines, Chichaqua is most readily accessed via two routes:

1. US Highway 6 (Hubbell Avenue) to US Highway 65, which bisects Chichaqua. This is the fastest route to Chichaqua, but it does not expose the traveler to many of Chichaqua's developed facilities.
2. Interstate 35 to the Elkhart exit, then east via NE 126th Avenue, NE Yoder Drive and finally NE 134th Avenue, which provides access to developed facilities at Chichaqua's northern edge.

Chichaqua is a mostly-contiguous patchwork of public land totaling 9,100 acres, of which 7,300 acres are located in Polk County. Most of the Polk County acreage is owned by the Polk County Conservation Board (PCCB), with the Iowa Department of Natural Resources (IDNR) owning a smaller fraction. Additionally, many areas owned by PCCB are subject to permanent easements administered by the Natural Resources Conservation Service (NRCS). These easements were authorized by the Wetland Reserve Program (WRP) and Emergency Wetland Reserve Program (EWRP), and are thus governed by all the requirements and restrictions of those programs.



FIGURE 0.4  
Skunk River circa 1875



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## CHICHAQUA AND WILDERNESS

The history of the Chichaqua Bottoms Greenbelt mirrors the course of the original Skunk River—winding, meandering, full of turns. From about 1,000 acres in the early 1990's, the Greenbelt's many partners have amassed a tract of more than 9,100 acres through hard work, wise resource use, and strategic acquisitions.

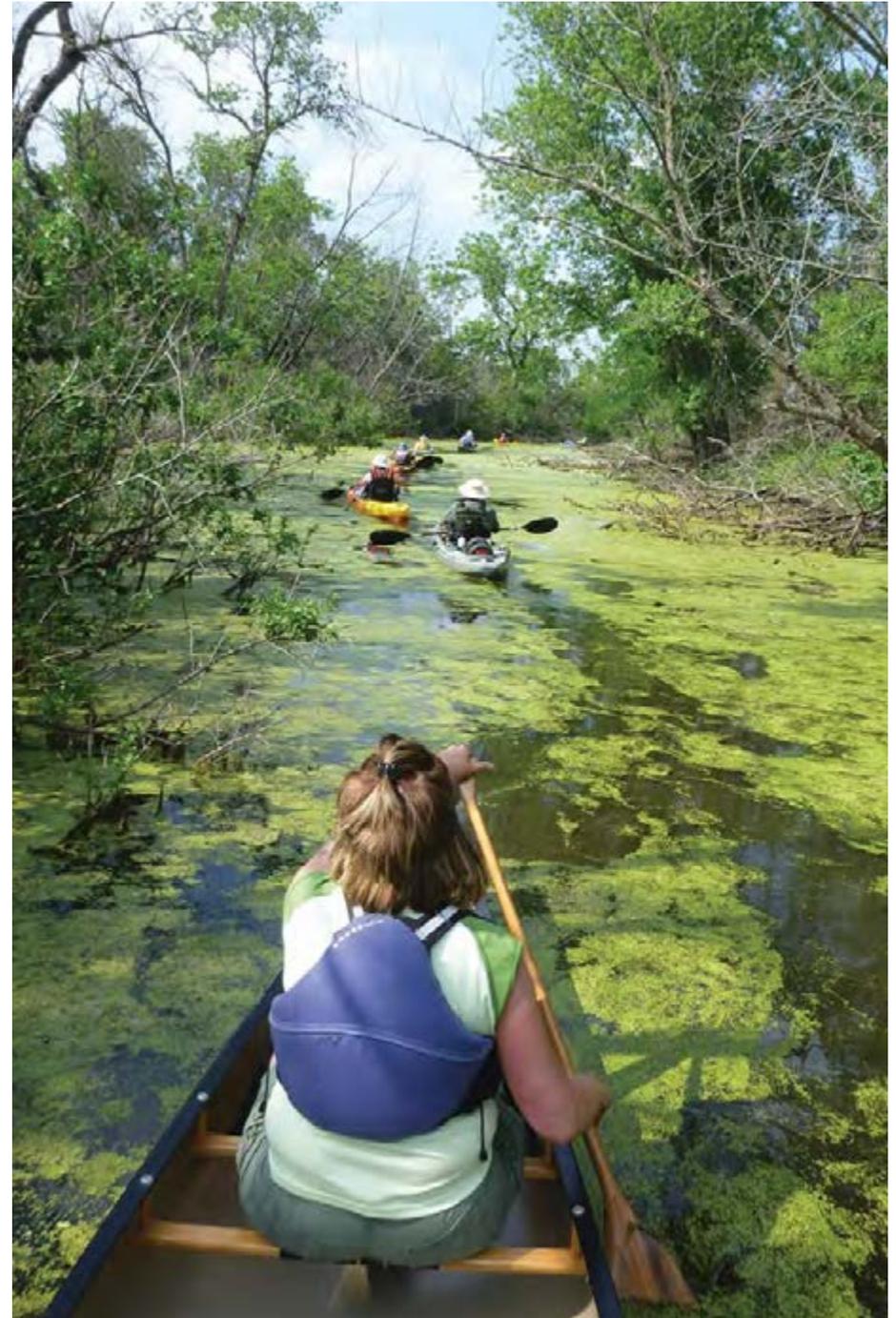
With such a mass of land comes new opportunities for Chichaqua to exceed early assumed limitations. Any natural area is noteworthy, but the proximity of Chichaqua to an urban center and its immersion in an agricultural landscape make Chichaqua all the more significant. The rare confluence of city, farm and wild lands positions Chichaqua as a model for restoring damaged natural systems and recapturing lost values through landscape-scale reclamation under challenging circumstances.

The vision that turns this challenge into opportunity comes through the many partners involved. These partners include hard-working neighbors, governmental agencies, public and private universities and a broader public holding a passion for this place. All recognize the value of moving beyond the wants of any single user group to embrace a wide variety of desires that find common ground at Chichaqua. Through this Master Plan, the partners also speak to the need to restore the natural functions of our native landscapes for wildlife and future generations.

Chichaqua is a once-again wild place of sandy hills, fertile bottomlands, fragments of South Skunk River meanders and straightened drainage routes to support agricultural neighbors. Spring flooding occurs most years and the occasional, more extensive flooding influences the facilities and activities that can be provided.

### HOW WILD IS CHICHAQUA?

We simply do not know whether to call Chichaqua wilderness or almost wild. Why? It depends on your perspective. The hydrology has been dramatically altered. Many of its acres were once cropped, and some still are. But Chichaqua often feels quite wild by urban standards. To an ecologist or researcher, however, we've simply made progress in restoration but have a distance to go. Chichaqua has opportunities to be restored to an ever wilder state. This plan supports that work while at the same time guiding us in welcoming newcomers to Chichaqua—many of whom will get their first taste of something wilder-than-usual here.



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*Blanding's Turtle*

# CHAPTER 1

ABOUT THE PLAN, PROCESS AND STRATEGY

## INTRODUCTION AND BACKGROUND

Flying over the Chichaqua Bottoms Greenbelt, a migrating bird can see the past and the present side-by-side.

The present is a straight drainage ditch running southeasterly. Engineers excavated the South Skunk River channel with steam shovels in the early part of the 20th century. Their ambitious project made possible the production agriculture that now occupies much of the valley. They cut a neat stripe of sand between earthen levees, which is now the only South Skunk River many people know. This ditch is the official river, marked with a green sign where it crosses beneath U.S. Highway 65.

The past can be seen off to the east, as the historic channel of a 24-mile labyrinth of oxbows and meanders which the river reluctantly abandoned when it moved to the new place men made for it. All wildlife favor the old channel, but will use the excavated channel during periods of low water.

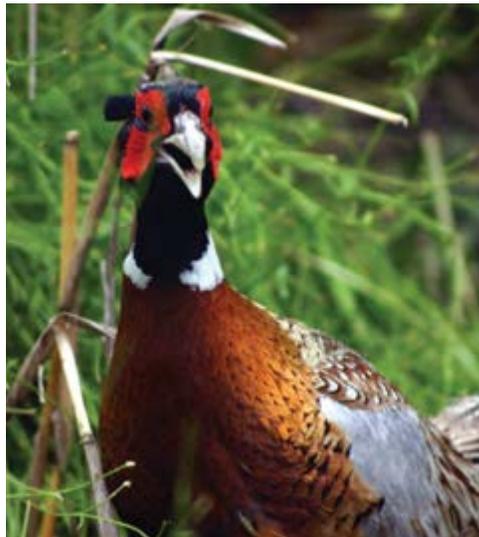
Modern agriculture and natural Iowa are also manifest at ground level. Western fringed prairie orchids and 200-year-old swamp white oaks can be found within a short walk from corn and soybeans.

The Chichaqua Bottoms Greenbelt—simply “Chichaqua” to locals—is a unique and compelling place, where modern people enjoy rare access to an ancient landscape. Many of those people, from all walks of life, have contributed to this Master Plan.

## PURPOSE

This Master Plan has two crucial aims:

1. To establish a guiding vision, mission statement and core objectives for Chichaqua.
2. To identify, quantify and prioritize any changes to Chichaqua that may be needed to achieve the core objectives, fulfill the mission statement and realize the vision.



## PROCESS

### STAKEHOLDER, STAFF INVOLVEMENT AND PUBLIC ENGAGEMENT

This Master Plan was developed with extensive involvement from a wide range of stakeholders. Stakeholder involvement was incorporated through four primary venues:

- Strategy Sessions
- Focus Group and Individual Interviews
- Public Workshop
- Planning Workshop

Details of the stakeholder involvement process are provided in Chapter II, Public Involvement.

### RESEARCH AND MODELING

Concurrently with the public engagement process, the consultant team conducted research, modeling, assessment or simple review of three major factors affecting the Master Plan: ecology, hydrology and archaeology.

#### ECOLOGY

A habitat suitability model was completed for Chichaqua and its immediate surroundings by Dr. Keith Summerville, ecologist from Drake University. Summerville’s study focused on six species of conservation concern as indicators of ecosystem health.

However, this Master Plan did not seek to evaluate current management practices. That task will be taken up in a subsequent Management Plan. Developing that plan is this report’s top recommendation.

#### ARCHAEOLOGY

In 2003 the Office of the State Archaeologist (OSA) conducted a geo-archaeological assessment of Chichaqua to identify areas with the highest probability for archaeological significance. That study determined nearly 75 percent of Chichaqua has archaeological potential of “low to moderate” or higher. This plan stays mindful of the need to sustain this archaeological resource.

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## HYDROLOGY

HR Green delineated the sub-watersheds that comprise Chichaqua. For each sub-watershed, hydrologic modeling was completed to evaluate runoff potential. This helped to identify the sub-watersheds which are most in need of runoff management practices. Additionally, HR Green developed cross-sections of the Chichaqua valley from available LiDAR data, in order to assess the feasibility of diverting water from the new South Skunk River channel (Ditch 25) to the old river oxbows at Chichaqua. This assessment determined such a diversion was not feasible.

## STRATEGIC PLANNING FRAMEWORK

The interactive planning process used here was informed by science, stakeholders and the public. Its result is a Strategic Planning Framework consisting of a list of guiding principles, a vision for the future, a mission statement and a brief list of over-arching goals for Chichaqua. This framework forms the foundation of the Master Plan.

### GUIDING PRINCIPLES

- Finding a balance among social, economic and environmental factors is crucial to the future of Chichaqua. However, ecological restoration shall govern decision making. The primary focus of Chichaqua is restoration of the native landscape.
- The many partners, ranging from individual landowners to the federal government, need ongoing mechanisms for involvement in Chichaqua's future. Their perspectives are essential and they influence each and every decision.
- Chichaqua's landscape-scale research and learning opportunity distinguishes the place from countless other "wild lands" set-asides.
- Exploring the intersection of urban, agriculture and wild land holds exceptional value for the future of our understanding of natural resources, social needs and economic vitality.
- The stories of Chichaqua's cultural history must not be lost, but celebrated.
- This landscape lends itself best to diverse, not exclusive, uses.
- Science and research of the recovering landscape are critical at Chichaqua. Science-based decisions move Chichaqua forward more than isolated anecdote.

- Chichaqua should serve Central Iowa as an example of how to reclaim a natural area within a working landscape.
- Chichaqua has value as a wild place. We must be watchful of over-development that would compromise restoration goals.

### VISION: IMAGINING CHICHAQUA'S FUTURE

In the future, Chichaqua will be a local, state and national model of the healing of once wild lands. Chichaqua will engage its agrarian and urban neighbors in research, education, and recreation.

### MISSION: LEADERSHIP IN WILD LANDS RECLAMATION

To repair and restore the native landscape at Chichaqua through leadership in habitat reclamation, science and education, strategic expansion, public/stakeholder partnerships, and landscape-sensitive recreation.

*Note: Where we cannot restore, we hope to repair. For example, we cannot likely restore Chichaqua's pre-settlement hydrology, but we hope to repair its hydrologic function. Repair implies for us "built," hardscape or technological fixes. Restore implies use of nature-based systems, less obviously involving man's direct hand.*

### OVER-ARCHING GOALS

Reclaim this landscape's pre-European settlement qualities as much as practical by establishing a mosaic of functional habitat types.

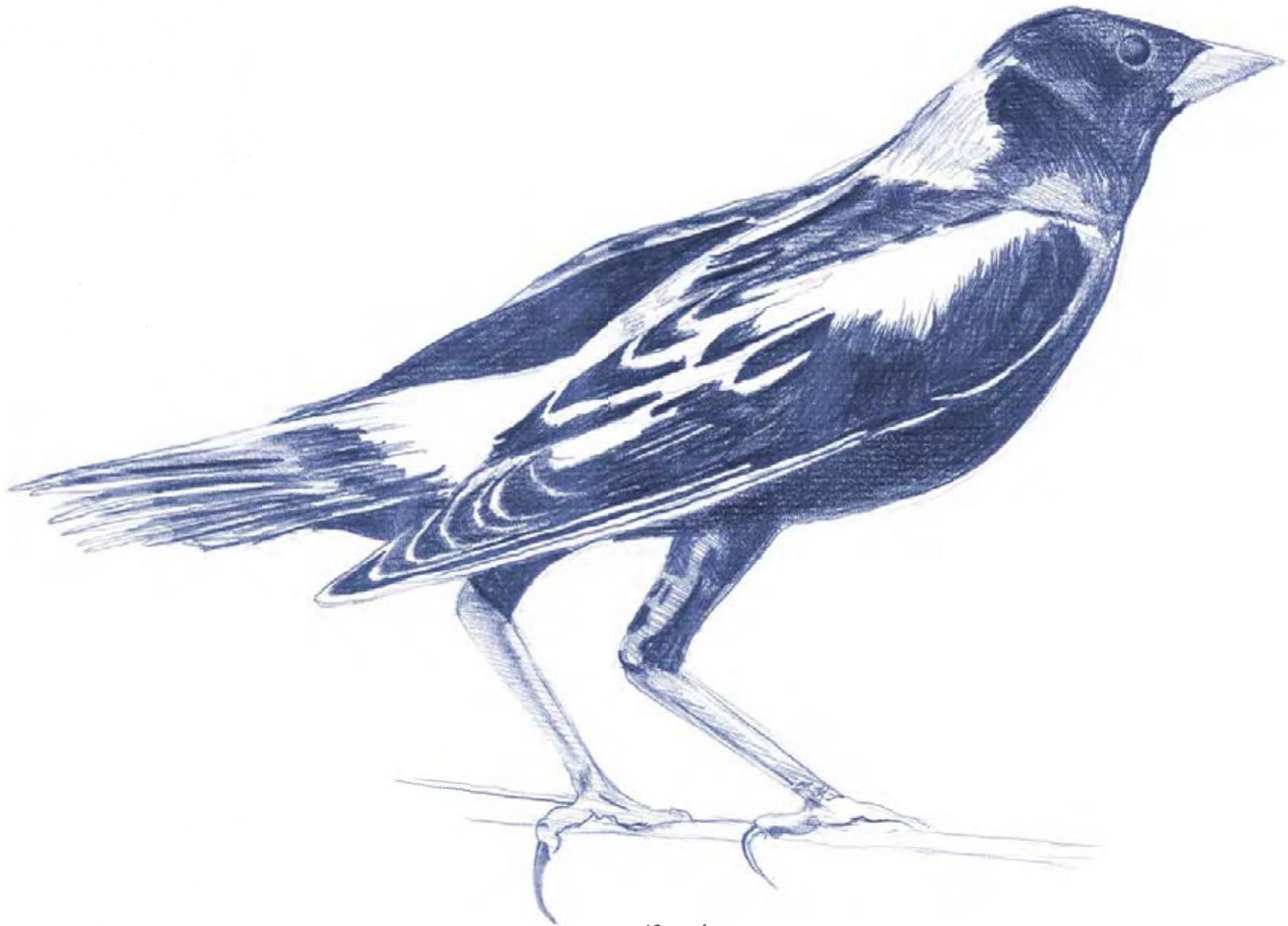
Create a restorative model that can be replicated throughout the state, region, and nation, achieving a balance between social, economic, and environmental interactions.

Increase the public's general understanding of the work involved in reclaiming wild lands and the benefits of natural systems and biodiversity.

Build awareness of the value of Chichaqua specifically as a reclaimed "wild" landscape close to the urban landscape.

Enhance and improve public access and awareness without compromising Chichaqua's ecological value.

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*Bobolink*

CHAPTER II  
PUBLIC INVOLVEMENT

## INVOLVEMENT

This Master Plan was developed with extensive involvement from a wide range of stakeholders. Stakeholder involvement was incorporated through four primary venues:

- Strategy Sessions
- Focus Group and Individual Interviews
- Public Workshops
- Planning Workshop



Strategy Sessions lasted approximately three hours each, and were held at the office of HR Green, Inc. in Johnston. These sessions were held on the following dates:

May 3, 2013—Kickoff: Aspirations, Opportunities & Obstacles

August 7, 2013—Topics: Recreation & Education

October 2, 2013—Topics: Ecology & Hydrology

November 19, 2013—Strategic Plan, Vision & Goals

September 15, 2015—Input on draft Master Plan

## STRATEGY SESSIONS

The Chichaqua Master Plan process began with the recruitment and convening of a Planning Advisory Committee including a science advisory team.

The Advisory Committee includes representatives of Chichaqua's various landowners and neighbors, as well as user groups and a broad-based public of interested residents. Among others, an invitation to participate was extended to the following organizations and individuals:

- Polk County Conservation Board
- Jasper County Conservation Board
- Iowa Department of Natural Resources
- United States Fish & Wildlife Service
- Natural Resources Conservation Service
- Iowa Natural Heritage Foundation
- Audubon Society
- Sierra Club
- Izaak Walton League
- Pheasants Forever
- Ducks Unlimited
- Drake University
- Des Moines Area Community College
- Area landowners with potential interest in ongoing participation
- State Historical Preservation Office

## FOCUS GROUP AND INDIVIDUAL INTERVIEWS

Additionally, a Focus Group was assembled for a two-hour meeting to discuss issues relating specifically to recreation and education. This group met at the Altoona City Hall on July 29, 2013 and represented a broad range of stakeholders, including: Cities of Altoona and Bondurant, Des Moines Public Schools, Iowa Rivers Revival, private and public fish and game organizations, cycling and birding interests, adjacent landowners and others. This focus group provided meaningful insights and advice to the Master Planning team.

The focus group was further supplemented through a series of individual interviews conducted through early Fall 2013, particularly focused on the perspective of private landowners and ecological concerns.

## PUBLIC WORKSHOPS

A well attended public workshop was held on October 24, 2013 at the Bondurant Public Library. An open house format was used, providing community members an opportunity to talk freely with PCCB staff and consultants as well as provide written comments through a suggestion box and other interactive features. An open house, with a brief presentation of the draft Master Plan, was held on September 8, 2015 at the Chichaqua Longhouse. [ ] were in attendance.

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## STAFF ENGAGEMENT

In addition to ongoing meetings with a smaller team of staffers, a broad-based staff input session was held in early November of 2013. Follow-up staff engagement sessions were conducted in [ ]

## PLANNING WORKSHOP

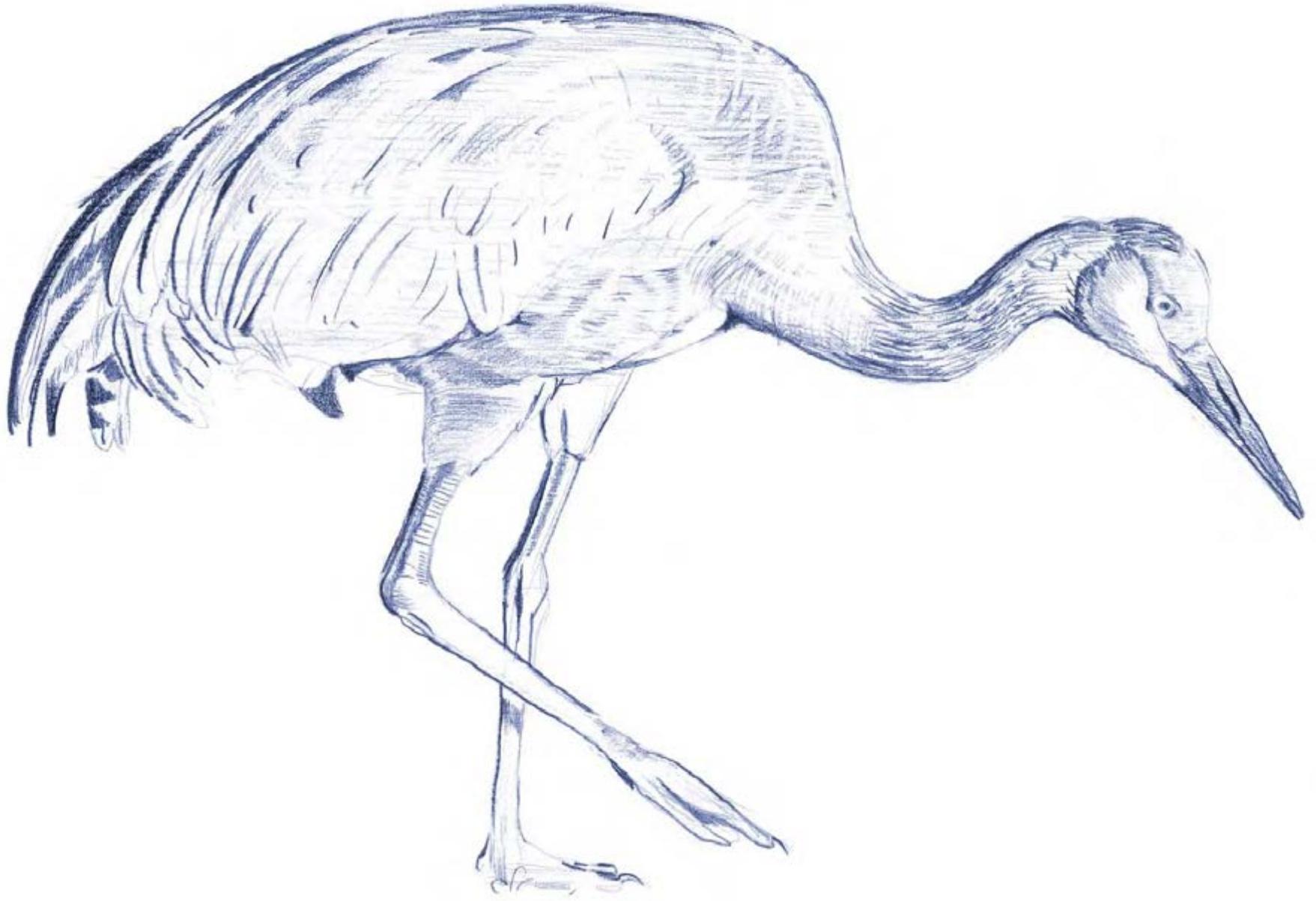
The Steering Committee met on November 19, 2013 to discuss a draft vision, mission statement and objectives prepared by the consultant team in response to this input.

## DRAFT PLAN REVIEW

In addition to the public open house on September 8, the Steering Committee reviewed and convened for additional feedback on the draft plan September 15, 2015.



# DRAFT



*Sandhill Crane*

# CHAPTER III

BACKGROUND/CURRENT CONDITIONS—  
WATER, LAND, PEOPLE, PLACE



## WATER

### HYDROLOGY/ASSESSMENT

The first task of hydrologic assessment was to clearly describe and assess the existing hydrology of the site, including a delineation of sub-watersheds.

Next, a hydrologic assessment of Chichaqua did not begin with a “blank slate.” Rather, the planning team was guided by PCCB staff’s intimate knowledge of the area, and their assessment of existing hydrologic challenges. According to PCCB staff, two primary hydrologic challenges exist at Chichaqua, which have profound ecological and recreational implications:

1. Water quality in Chichaqua’s wetlands is influenced by sediment and nutrient inputs from watersheds along the east side.
2. Existing soils and drainage networks cause an expedited hydrology that is disadvantageous from an ecological and recreational standpoint. Simply stated, water often seeps or drains away from the surface at Chichaqua too quickly to provide optimum habitat for wildlife or recreational opportunities for people.

Hydrologic assessment was thus guided by three primary aims:

- Identify the locations at Chichaqua that are most prone to erosion and nutrient inputs, and establish the peak flow rates (cubic feet per second) for Best Management Practices (BMPs) required to control erosion in those locations.
- Identify key “points of hydrologic interest,” where surface waters may be managed and controlled for recreational and habitat improvement.
- Identify locations where existing drainage ditches, including the South Skunk River, may be “borrowed” to rehydrate the old river channels without adverse impact on drainage of upstream agricultural lands.

The results of hydrologic assessment were then used to establish the hydrologic improvements recommended later in this Master Plan. Extensive hydrologic modeling was not conducted. The accuracy of modeling in a wetland/floodplain/drainage conveyance environment would depend on detailed survey and extensive modeling, beyond the scope of this Master Plan.

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## THE OLD RIVER

The original purchase of public lands at Chichaqua was centered on the old river channel. The old channels and oxbows of the former Skunk River provide wooded wetland habitat when adequate water is available. Four distinct sections of channels and oxbows exist as follows:

- **Northwest channels & oxbows.** The Northwest channels & oxbows are the best-known at Chichaqua. They are located near the roadway of NE 126th Avenue, and are easily accessible from the existing ranger station and Chichaqua Longhouse area. These channels are also some of the widest, deepest and most extensive at Chichaqua. Approximately 4.7 miles of continuous channel exist here, not including dead-end loops, braided side channels or landlocked oxbows. However, the Northwest channels do not have a flow-through connection to the aforementioned drainage ditch network, and therefore function as ephemeral or semi-permanent still-water wetlands.
- **Northeast channels & oxbows.** The Northeast channels run from the outlet of Ditch 4 to the beginning of Ditch 52 at NE 118th Avenue. These channels are an integral part of the drainage ditch network described above, and are thus the only channels through which current regularly flows. They are also some of the shallowest and narrowest at Chichaqua. Approximately 3.2 miles of continuous channel exist here, not including dead-end loops, braided side channels and landlocked oxbow segments.
- **Central channels & oxbows.** Lying between NE 118th Avenue and US Hwy 65, the Central channels are characterized by relatively deep, well defined channels. Approximately 3.6 miles of continuous channel exist here, not including dead-end loops, braided side channels and landlocked oxbow segments.
- **South channels & oxbows.** This short, isolated section comprises approximately one mile of continuous channel, located south of US Hwy 65.

## WATERSHEDS

Chichaqua comprises nine distinct sub-watersheds within the South Skunk River watershed. Adjacent land uses have an impact on water quality in Chichaqua's wetlands, especially along the northeastern fringes of Chichaqua. The sub-watersheds labeled A through F, and especially sub-watershed C, are problematic from a water quality standpoint. These sub-watersheds contain intensively cultivated areas with highly erodible soils, and have the most significant ground slopes. Consequently, they often produce runoff laden with sediment and nutrients. (See map, Chapter 4, page 38)

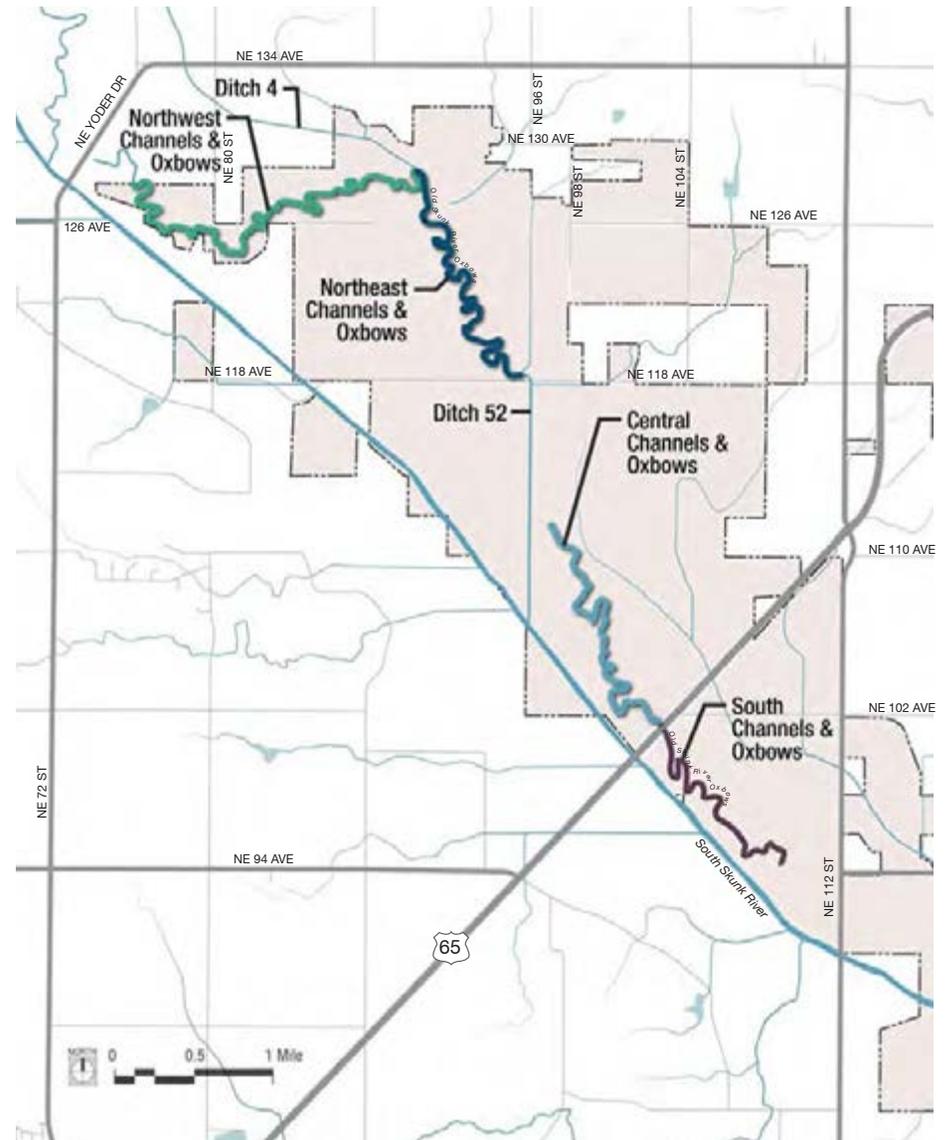


FIGURE 3.1  
The Old River—Channels and Oxbow

## DITCH NETWORKS

Much of Chichaqua lies within the 100-year floodplain of the South Skunk River. Nevertheless, due to a constructed network of drainage ditches, most of the valley drains readily during normal precipitation patterns. This network conveys runoff from Chichaqua and adjacent private lands to the excavated South Skunk River channel. The network is built around four primary ditches as follows:

- **Ditch 25.** Also known as the South Skunk River, this regional drainage canal bisects Chichaqua from northwest to southeast. Nearly 700 square miles of land upstream from Chichaqua are drained by the South Skunk River. An additional 25,000 acres (39 square miles) drain to that segment of the river which flows through Chichaqua. Most of that acreage lies west of the river.
- **Ditch 4.** Ditch 4 drains more than 4,600 acres (7.3 square miles) of farmland north of Chichaqua, and enters Chichaqua northwest of the existing ranger station complex. From there, Ditch 4 proceeds easterly to a control structure at the entrance to a narrow, meandered section of old river channel. Drainage then meanders through the old river channel, eventually discharging to the Ditch 52 system.
- **Ditch 52.** Ditch 52 is an L-shaped system. Its east-west leg is the road ditch of NE 118th Avenue. Flow in this leg can proceed in either direction, depending on the level of the South Skunk River. At very high river levels, water enters Chichaqua flowing eastward. As the river recedes, water drains

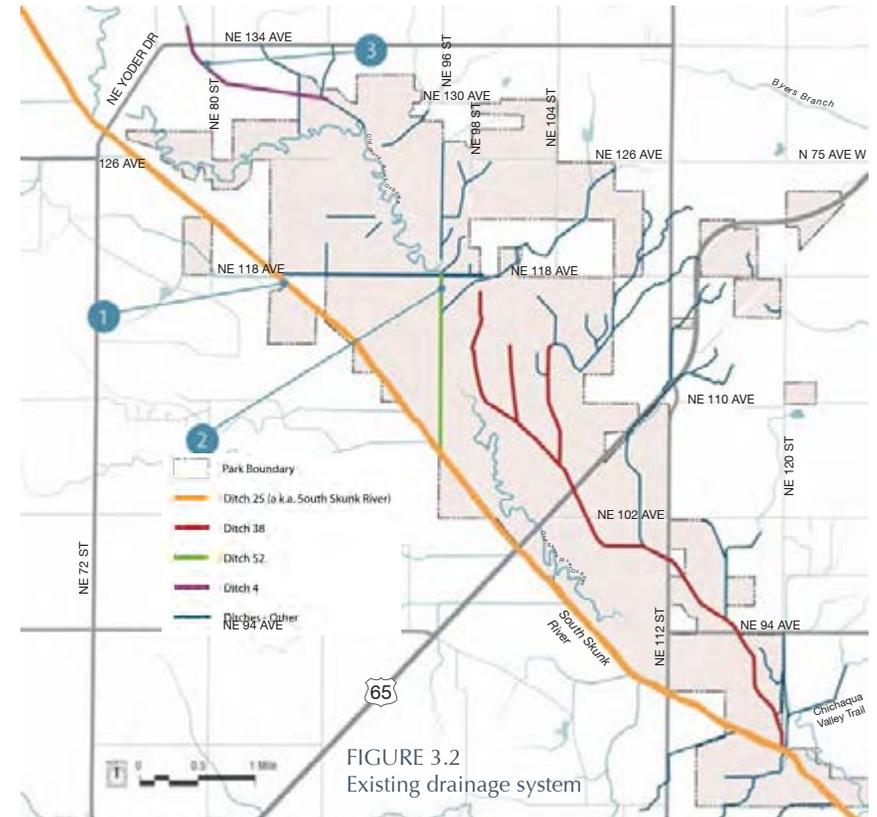


FIGURE 3.2  
Existing drainage system



FIGURE 3.2  
South Skunk River

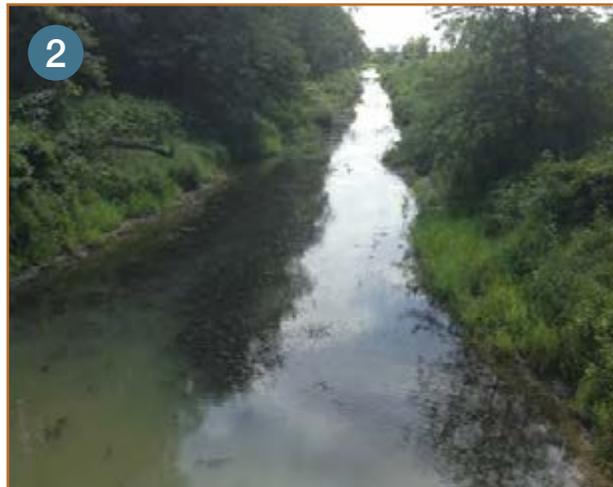


FIGURE 3.3  
Ditch 52



FIGURE 3.4  
Ditch 4

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FIGURE 3.5  
Northwest oxbows

back toward the river, flowing westward. The north-south leg begins at the NE 118th Avenue crossing over the old river channel. Drainage from Ditch 4 enters here and flows due south, discharging eventually to the South Skunk River. The north-south leg of Ditch 52 is among the deepest and most prominent of all ditch segments at Chichaqua. It supports limited aquatic life and holds water even during prolonged periods of dry weather. In addition to the area drained by Ditch 4, which enters it, Ditch 52 drains an area of 4,300 acres (6.7 square miles), nearly all of which is owned by PCCB.

- **Ditch 38.** Ditch 38 is a branched system with several south-flowing tributaries converging near the intersection of NE 102nd Avenue and NE 112th Street. Ditch 38 drains an area of approximately 3380 acres (5.3 square miles), and its northern reaches run through the heart of the old river meanders. The majority of Ditch 38 lies within the boundary of Chichaqua.

## GROUNDWATER

The natural systems at Chichaqua are ultimately groundwater-driven. All restoration relies on the movement of water through permeable soils and existing drainage infrastructure. Beneath the surface, groundwater flows laterally across Chichaqua from east to west, percolating through sand deposits toward the South Skunk River. When the groundwater table is high, this lateral percolation is intercepted by the various drainage ditch systems. In an exceptional drought, surface water flow may all but disappear from these ditches, and even from the river bed itself.

## WETLANDS

Numerous shallow ephemeral wetlands exist throughout Chichaqua. Some of these have been established by plugging existing drainage tiles or constructing earthen berms to retard the flow of water from these wetlands and extend the residence time of water within them. Permanent, deep-water wetlands are rare, since Chichaqua is so effectively drained by the network of ditches and by the glacial sands underlying the Group B and B/D soils. Additionally, several wetlands have been constructed, or are currently underway, to mitigate impact elsewhere.

A controlled waterfowl hunting area provides an additional 400 acres of seasonal and semi-permanent wetland habitat. This area is enclosed by levees, and water levels are maintained by pumping from a groundwater well source.



FIGURE 3.6  
Controlled waterfowl area



## LAND

### STORY OF HABITAT AND ECOLOGY

- More than 40 years of expansion and restoration have created a patchwork of habitats of varying quality at Chichaqua.
- Significant expanses of lowland and upland habitat now exist throughout the valley.
- However, notable gaps remain between zones of similar quality.

### ECOLOGY AND WILDLIFE

Restoration efforts at Chichaqua have re-established extensive areas of tallgrass prairie grasses, sedges and forbs. This prairie complex is pocked with many small, ephemeral wetlands. Bottomland deciduous forests exist along the Old River, and the presence of sandy, water-deposited or wind-blown soils in some areas creates unique habitats that exist in few other places in Iowa. As a result, Chichaqua has become a focal point for biological and ecological research.

Chichaqua is a popular destination for hunters. Plentiful and popular resident game species at Chichaqua include whitetail deer, Eastern wild turkey, ringneck pheasant and cottontail rabbits. Migratory game can also be found in seasonal abundance, including Canada geese, mourning doves and a wide variety of duck species.

Non-game species also thrive at Chichaqua, and are of increasing interest to birders and wildlife viewers. The majority of Iowa wild life species are not hunted. Non-game species are given equal consideration and native species shall have priority over non-native species. Chichaqua is not only a year-round habitat for resident wildlife, but it is also a crucial stop on the journey for many trans-continental and even inter-continental migrants.

### ECOLOGY RESEARCH/UNDERSTANDING PROGRESS

A habitat suitability model was completed for Chichaqua and its immediate surroundings by Dr. Keith Summerville, ecologist from Drake University. Summerville's study focused on six species of conservation concern as indicators of ecosystem health:

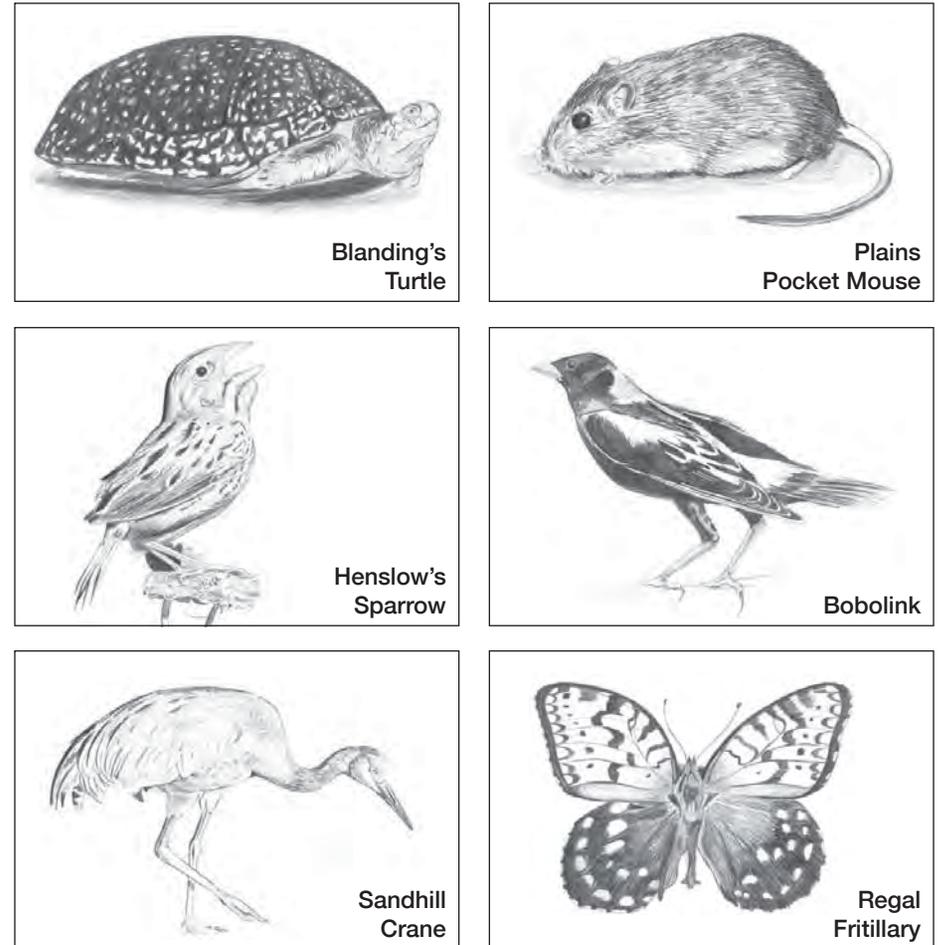


FIGURE 3.7  
Summerville's subjects

These species use a broad range of habitat types at Chichaqua, and they represent a wide range of animals: mammal, insect, bird and reptile. More importantly, the presence, absence and relative abundance of these six species

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are good indicators of wetland and xeric prairie health—two of the most valuable ecological communities from a conservation perspective at Chichaqua.

However, this Master Plan did not seek to evaluate current management practices. That task will be taken up in a subsequent Management Plan, which is beyond the scope of this Master Planning effort. Rather, Summerville examined the background conditions of the landscape—ground slope and aspect, soil type, water depth, etc.—in order to identify the areas where each of these species could thrive with proper management. Consequently, some areas identified by the model as potential habitat are at present under cultivation, and therefore devoid of these species. Therefore the model’s identification of these areas indicates potential habitat, extension of existing habitat, or connections between isolated habitat islands that may exist if current land uses change.

## SOILS

Pioneer tales from the area speak of the dreaded Skunk River bottoms, where no horse could gain a foothold because of swampy conditions. That all changed when the South Skunk River channel was excavated in the early part of the 20th century. Certainly Chichaqua’s muddy past is evident whenever the South Skunk River and its associated groundwater table are high. But when the river recedes, so does the water throughout Chichaqua.

The landscape at Chichaqua is composed almost entirely of hydrologic soil group B in the upland fringes, and B/D in the floodplain areas.

- Hydrologic Soil Group B includes silt loams or loams with moderate infiltration rates.
- Hydrologic Soil Group D includes clay loam, silty clay loam, sandy or silty clays with very low infiltration rates. Examples include scattered areas of Zook clay soils, which are noted for their capacity to hold water on the surface for long periods.
- Hydrologic Soil Group B/D includes soils that exhibit B-type properties when drained, and D-type properties when thoroughly wetted.

These are the soils which gave the Skunk River bottoms their dreaded reputation as an impassable swamp. However, at Chichaqua these soils extend only a few feet below the ground surface, and are underlain by fine-to-medium glacial sand and gravel deposits extending all the way to bedrock. Chichaqua lies just inside the southern end of the Des Moines glacial lobe, a few miles north of the lobe’s terminal moraines.

Additionally, some soils at Chichaqua are the result of wind-blown sand deposits (dunes). A notable example is the Sandhill area, but smaller dune formations are also scattered throughout the floodplain on the east side of the old river meanders.

### The Importance of Disturbance

“We think of ecological restoration as a destination, but it’s a bus stop. Species come and go. They might leave on a short trip to someplace else and return. Or leave altogether and never come back.”

- Loren Lown, *Natural Resources Specialist, Polk County Conservation*

Our purpose should be to establish a matrix of suitable habitat patches that provide refuge for sensitive species to visit and then return when conditions are proper. In an ocean of agricultural land there is often no other suitable habitat. At the same time, we must recognize that Chichaqua’s conservation lands work in concert with others in the area. We provide a suitable habitat so that, together with other conservation areas in the landscape, species have a reasonable probability of regional persistence. We cannot make the false promise that there will always be Bell’s Vireo on sandhill prairie.

Grassland restoration in Iowa, or at Chichaqua, is not a one-size-fits-all proposition in terms of goals or process details. We typically seek a complex mix of plants to support wildlife, but we can just as readily target simple systems to support a particular species. Yet all grasslands require disturbance. Without disturbance, the trajectory of land cover in a “wet” state like Iowa will be trees. We may hay, mow, graze or burn, but at Chichaqua we need room for disturbance.

Plants, animals and insects need a local safehouse during fires, floods or school hikes. Otherwise, species hop on the bus during this interruption in their lives and may never return.

Surrounded by an ocean of agriculture and urbanizing lands, species don’t have far to go before reaching inhospitable habitat.

## PEOPLE

### HISTORY AND CULTURAL BACKGROUND

As one stakeholder noted during the Master Planning process, “we are not the first people to think Chichaqua is a very special place.” More than two dozen archaeological sites have been discovered and recorded within the boundaries of Chichaqua, and subsurface sediments in many areas probably contain artifacts of Paleo-Indian through Woodland period cultures. American Indians made extensive use of Chichaqua’s rich resources, and made their presence felt on the landscape through fishing, hunting, small-scale cultivation and timber harvest and habitat management methods like controlled burning.

European settlement of the Chichaqua area began in the early 1800’s. An exhaustive survey of settlement history is beyond the scope of this Master Plan. However, this history is rich and surprisingly diverse. As examples, two important remnants of that history are the nearby community of Santiago, and the Holy Cross Catholic parish. The latter is a 160-year-old community founded by Irish immigrants whose thriving church is adjacent to Chichaqua. Some of its members have been instrumental in the growth of Chichaqua.

The rise of modern, mechanized agriculture has likely had the greatest historical impact on the lands of Chichaqua. After 1900, the landscape and its hydrology were extensively modified. Through drainage projects, the South Skunk River bottoms were transformed into a high-yield producer of corn and soybeans. Consequently, most of today’s prairie and wetland habitats at Chichaqua are the result of active restoration efforts since the 1960’s.

The PCCB first began acquiring the property that would become Chichaqua in the 1960s, amassing 1,161 acres by the end of that decade. PCCB has continued to purchase land from willing sellers ever since, but Chichaqua’s growth was given a boost by the flood of 1993. This flood caused severe damage to agricultural areas in 20 states. In response to the flood, Congress created the Emergency Wetlands Reserve Program (EWRP). Unlike the Wetlands Reserve Program (WRP), this new program was not restricted to farmed wetlands and thus could be used to create permanent easements to preserve wooded riparian habitat. Property owners along the South Skunk River enrolled in the program, and then subsequently sold their properties to the PCCB.

In many of these purchases, the Iowa Natural Heritage Foundation (INHF) played a key role. At times when PCCB lacked the initial capital to acquire available properties, INHF purchased the land and then re-sold it to PCCB on a financing schedule.

### Archaeology

In 2003 the Office of the State Archaeologist (OSA) conducted a geo-archaeological assessment of Chichaqua to identify areas with the highest probability for archaeological significance. That study determined nearly 75 percent of Chichaqua has archaeological potential of “low to moderate” or higher.

The locations most likely to contain archaeological resources are not depicted in this Master Plan in order to protect their integrity. However, their probable locations were considered in the development of this plan’s recommendations for recreational improvements, which have been sited to minimize impact to the most probable archaeological sites.

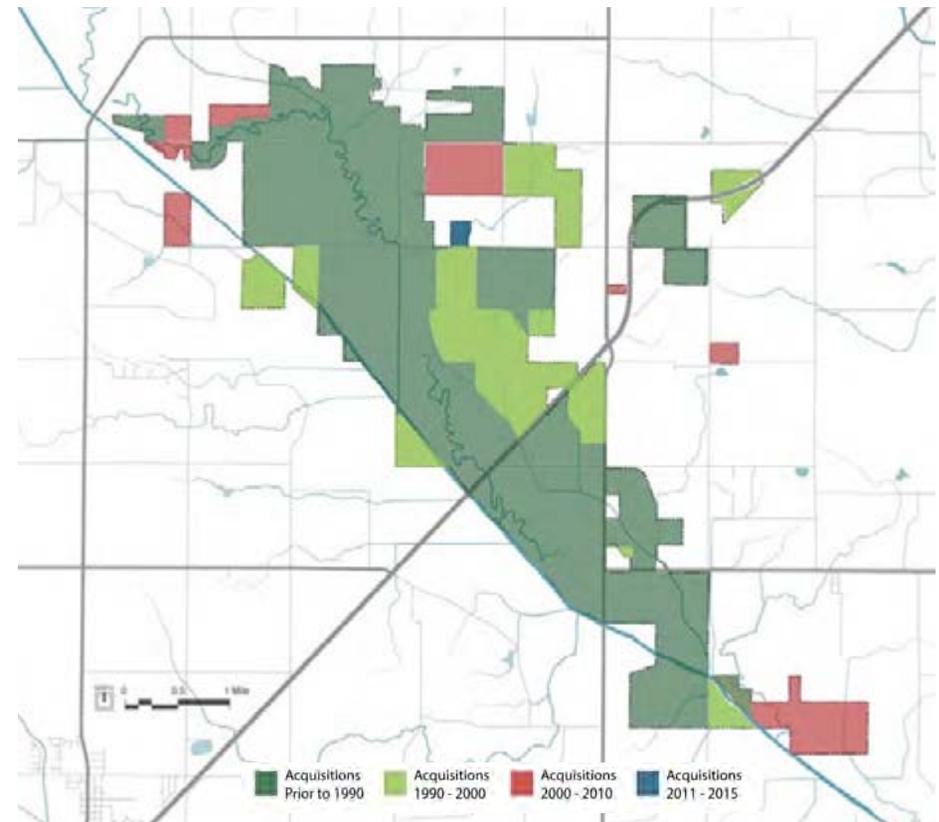


FIGURE 3.8  
History of Chichaqua acquisitions

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## SOCIAL ENVIRONMENT

The main activities at Chichaqua include hunting, scouting, dog training, paddling, camping, birding, hiking, cross-country skiing and use of the multi-purpose Chichaqua Valley Trail. PCCB naturalists provide ongoing programming for school groups or families and individuals. Not counting use of the Trail, Chichaqua's peak activity (by people) occurs during hunting season, but year-round use continues to grow.

Some of the activities that truly set Chichaqua apart from many other facilities in Iowa include dog training and trials and the annual Buckskinners' Rendezvous—dedicated to Iowa's fur trade history. This multi-day event draws large crowds from across Iowa and beyond. Additionally, Chichaqua supports extensive use of resource areas for education and research.

While Chichaqua does not currently draw the same level of day-to-day use as other facilities in the Polk County Conservation system, a strong case can be made that its values simply cannot be measured by the means used to assess a traditional park. Chichaqua provides a great way for young and old alike to explore a wild landscape on a grand scale. Users are afforded an opportunity



Overnight stay including camping is a growing recreational trend at Chichaqua.

for immersion experiences. It's a place to remove baggage of social constructs, work-a-day stressors and urban pressures.

Chichaqua serves a potentially unique niche in all of Iowa's park systems, as one of the largest contiguous publicly held land masses in the state, immediately adjacent to Iowa's largest urban center. It affords opportunities to deliver on the promise of the Iowa Parks Foundation's Strategic Plan—to bring exceptional places and experiences into the everyday lives of Iowans. As a potential path for promoting physical and mental health, restoring wild spaces, connecting to community (physically and socially) and delivering great experiences to wide-ranging users, Chichaqua may be unparalleled in Iowa in providing the opportunity for Iowans to understand what "wild Iowa" was pre-settlement.

Chichaqua is a juxtaposition of wild lands, modern agriculture and an approaching urban interface. Chichaqua offers a legacy of wild places—a deep-rooted connection to its farm neighbors and to the larger regional complex that includes the Neal Smith National Wildlife Refuge and many communities surrounding Des Moines.



Education and interpretation opportunities are abundant at Chichaqua.

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## PLACE

### FACILITIES

The ongoing work of Chichaqua as a place to “heal wild lands” comes with few traditional built facilities, like those one might see in a manicured park. Instead, Chichaqua includes several wetland mitigation projects and ongoing habitat restoration projects. Chichaqua is likely best known to the hunting and birding communities within central Iowa, but increasingly paddlers, hikers and others have begun to discover its appeal. Chichaqua is one of Iowa’s initial Bird Conservation Areas with more than 200 bird species documented.

Chichaqua holds few built facilities, but they are important to the advancement of its mission. Research is now well underway at Chichaqua through a variety of institutional partnerships. This work currently takes place in facilities designed for other purposes. Still, Chichaqua has facilities worth noting, most of them concentrated at the Greenbelt’s north end.

#### RECREATIONAL FACILITIES

Recreational facilities at Chichaqua include the following:

- 11 electric (50-amp) and 15 non-electric campsites, plus a youth group campground and water trail campground (three primitive sites)
- Restroom and shower house
- Bird blind
- Canoe rental
- Picnic areas
- Rental lodge known as the Longhouse (a popular spot for meetings, weddings and scout groups)
- Four hiking trails (ranging from 0.2–2.6 miles in length, all considered “easy” hiking)
- Trap shooting range and controlled hunting facilities

#### MANAGER’S RESIDENCE

A private residence for the Chichaqua manager is located near the Longhouse, campgrounds and maintenance facilities. This provides relatively easy access for oversight, but the current location is flood-prone. This Master Plan suggests moving the residence to a new location.

#### MULTI-PURPOSE TRAIL

Chichaqua contains a segment of one of Central Iowa’s most popular trails—the 20-mile Chichaqua Valley Trail (CVT) linking Baxter to Bondurant. The CVT Trailhead is currently located at Northeast 88th Street, South of Highway 65 and one mile east of Bondurant. The portion of the trail cuts through the southern third of Chichaqua, but has no access points to the larger greenbelt. And this trail will soon be linked through an extension to Des Moines, increasing public access opportunities.



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## Hunting and Fishing at Chichaqua—Current Management Zones

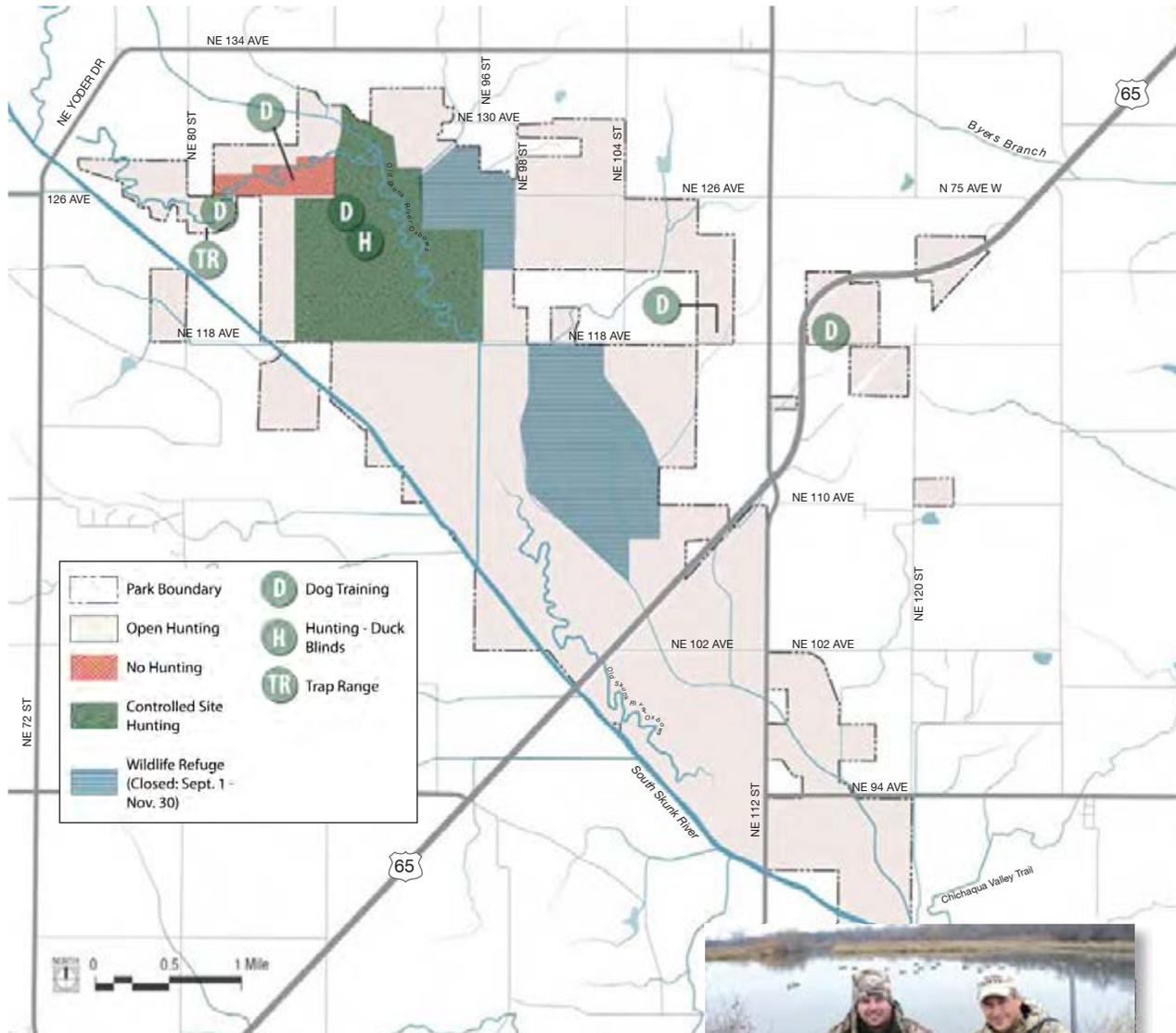


FIGURE 3.9  
Existing hunting facilities

Hunting remains a vital force on the Chichaqua landscape—helping to maintain predator-prey relationships and meeting an ongoing recreation demand. Appropriate management is fundamental to successful hunting at Chichaqua. Facilities play a lesser role.



### Hooks & Bullets

#### Managing “consumptive use” at Chichaqua

The earliest human residents of the South Skunk River valley took their sustenance from the land’s rich resources. It is appropriate that humans continue to consume the wild delights that Chichaqua has to offer. However, proper management balance is needed as follows...

#### Hunting

Hunting always has been, and should continue to be an integral part of Chichaqua land and recreation management. At the same time, the recreational profile of Chichaqua must become increasingly multi-dimensional. Chichaqua must be more than “public hunting ground.” The real safety of the non-hunting public is of paramount importance, and so is the perception of safety by non-hunters who long to connect with wildness. The very sound of gunfire may prevent some people from embracing Chichaqua as fully as desired by the stakeholders of this planning effort. Chichaqua must be managed in a way that balances hunting with the needs of non-hunters.

#### Fishing

Polk County has an abundance of quality public angling opportunities outside Chichaqua. Due to a relative scarcity of permanent deep-water habitat, Chichaqua is not currently a popular fishing destination. Moreover, it is not likely that dependable fisheries can be cost-effectively restored to the historic riparian corridor. Improvement of angling opportunity was not identified by the stakeholders as a key need at Chichaqua. However, as permanent deep-water habitat is established for other ecological purposes, appropriate fisheries should also be established as an additional amenity.

#### Ecology first

All consumptive uses, whether of game or fish or edible plants, must be managed in a way that protects the ecological integrity of Chichaqua. Any activity that threatens the ecological stability or sustainability of the resources of Chichaqua shall be limited or shall cease until the resource is secure.

#### Commercial Harvest

Commercial harvest of any plant or animal species is forbidden with exception of land management activities directed by management personnel.

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*Henlow's Sparrow*

# CHAPTER IV

## RECOMMENDATIONS—STRATEGY AND FACILITIES

## STRATEGIC RECOMMENDATIONS

*One of Chichaqua's greatest contributions to American life should be to help us transcend the polarities of Agriculture vs. Nature, or City vs. Wilderness. An opportunity exists here for harmonious integration of natural interests with developed landscapes. Chichaqua could thus become a living example of countryside at peace with its neighboring communities.*

The process of identifying the current and future needs of Chichaqua involves a synthesis of the information received throughout the process. This information was gathered through the Planning Advisory Committee, public meetings, input from other governmental agencies, natural resource assessments and additional data obtained by the staff and consultants. As a result, a clear picture of the needs of Chichaqua emerged. These needs fall into the categories discussed below.

### EXPANSION & INTERCONNECTION

*Grow and connect Chichaqua through partnerships and expanded protections.*

We have already noted the historic growth of the public holdings that now constitute Chichaqua, and the significance of its current size as wild land in close proximity to agrarian and urban landscapes. The size of Chichaqua has been controversial. A minority public voice has questioned the acquisition and restoration, citing the conversion of farm land and the loss of property tax revenues.

Nevertheless, the project stakeholders concur on the need to *expand Chichaqua's influence*, and this may necessitate further geographic expansion. However, not all geographic expansion must occur through direct acquisition. Other kinds of partnerships that *interconnect Chichaqua with its urban and agricultural contexts* are crucial to fulfilling the stakeholders' vision for Chichaqua.

For example, the South Skunk River and its associated watershed exert tremendous impact on the Chichaqua experience. The water flowing through Chichaqua faces water quality challenges (excess sediment and nutrient loading). High-speed flows reaching Chichaqua cause erosion. Without good water quality, Chichaqua faces sediment-filled wetlands, damage to wildlife and habitat and dramatically reduced recreation opportunities. This situation challenges the future of Chichaqua (indeed, all of Iowa) since it is

not reasonable to expect total control of the watershed through acquisition. It's impossible to ignore the influence of a developed landscape and the major influences that development has on "natural" areas.

Therefore, Chichaqua needs a renewed effort to interconnect with partners up and down the watershed. These partners include private landowners, developers and local, state and federal agencies. The stakes are high. Polk County Conservation Board, working with many partners, hopes to mitigate future impacts. The intent here is to express the need for public advocacy and the involvement necessary for Chichaqua to be a sustainable and valued natural area in the future.

The over-arching need to expand the influence of Chichaqua requires some or all of the following strategies:

- Develop a standing Chichaqua Bottoms Greenbelt Technical Advisory Committee.
- Establish a Friends of Chichaqua initiative to supplement technical expertise and provide advocacy for Chichaqua, including targeted philanthropy to create restricted dollars for research and management for CGB.
- Through partnerships, maintain Chichaqua's integrity with watershed-scale protection initiatives, Chichaqua buffering and vegetation management.
- Develop a community trail system engaging urban, rural, agricultural and Chichaqua partners.
- Brand the Chichaqua Valley Community to build recognition for the many neighbors.
- Develop an understanding that restoration and recovery of damaged ecosystems is possible even in the most damaged or altered landscape.
- Support and expand research opportunities focused on restoring/reclaiming historic functions of the Iowa landscape.
- Working with a host of partners, explore the viability of prairie as both protective and productive working landscape.
- Expand Chichaqua through voluntary land partnerships, easements and acquisition, for infill, buffering and connecting to Neal Smith National Wildlife Refuge and Lake Red Rock.
- More specifically, acquire lands, easements or cooperative agreements to the North and East to support expansion of habitat, to the South and West for buffer and additional public recreation and education opportunities.
- Support the development of an ecological corridor through partnerships with both private and public sectors, incorporating principles of conservation biology to make these connections.
- Update the Chichaqua management plan in accordance with this Master Plan and existing easements, and at least once every 3–5 years thereafter.
- Expand documentation of Chichaqua's existing conditions as an improved benchmark for measuring a range of successes.

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## CIRCULATION

Improve visibility, access, way-finding and safety at Chichaqua without diminishing the untamed experience it has to offer.

### VEHICULAR

1. Improve signage and directional/way-finding
2. Enhance public safety through the use of technology for monitoring and appropriate lighting (maintain “dark skies”)
3. Identify primary Welcome Portal and education/orientation station
4. Develop secondary welcome/information hubs
5. Improve parking access
6. Simplify vehicular roadways/network
7. Provide a continuous paved route to the primary welcome portal (Chichaqua Station).

### TRAILS AND PATHWAYS

1. Expand accessibility
2. Improve aquatic access and develop paddling routes
3. Connect Chichaqua paved trail users to the greater greenbelt landscape for stewardship, education and expanded recreation
4. Connect trail systems and develop trails south of Highway 65
5. Enhance/expand footpaths and soft paths, including loops of varied lengths
6. Develop trailheads
7. Prohibit harmful activities such as motorized recreation

### ENTRY PORTAL

While we look to modify some of the roadway system through Chichaqua over time, we do not envision a future for Chichaqua of one singular point of entry. Instead, we see primary and secondary portals, intending to give a strong sense of “you have arrived.” That element is largely missing from the Chichaqua experience today.

But these portals provide more than a good feeling. They’re intended to educate Chichaqua-goers about:

- Events and recreation opportunities
- Science advancements and research

- Self-directed and supported activities
- The role of hunting in the landscape and user safety
- Access points to landscape features and built facilities
- Ongoing “environmental literacy” information—from water to wildlife, climate to backyard conservation
- The larger Polk County Conservation system
- Chichaqua’s role in Polk County, Iowa and Regional landscapes

And, perhaps most important, they’re intended to help visitors find their way.

### WAY-FINDING AND DESTINATION SIGNAGE

Chichaqua faces a dearth of directional signs. Attempting to find Chichaqua for the first time plagues the user with doubt (“I must have missed it somehow”). This reinforces a public perception that Chichaqua is a long way away. Once you have arrived at Chichaqua, the situation does not particularly improve.

An early “win” for this plan comes with the development of a comprehensive signing scheme for Chichaqua coupled with energetic execution of that plan. The size and scope of Chichaqua makes way-finding critical for successful adventures.

At the same time, the way-finding, like roads and trails, must enhance the experience and not pollute the visitor’s ability to explore. Finding the right balance between safety through signage and uninterrupted immersion in the landscape requires careful system design and development.

### RECREATION

Reconnect the urban public to the intrinsic values of experiences in wild lands (also see “Trails and Pathways” above).

1. Develop recreational opportunities to fit the landscape
2. Develop unique overnight opportunities
3. Expand wildlife viewing and other recreation opportunities that leverage Chichaqua’s biodiversity and outdoor skills-building
4. Encourage the use of Chichaqua as a resource that allows quiet self-reflection and is an artistic inspiration
5. Create a build-your-experience Chichaqua Bottoms Greenbelt App

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## CULTURAL HERITAGE AND PRESERVATION

We are just the latest generation to find this area alluring. Native American life, rural and agrarian interests and the history of an engineered river converge here.

1. Consider the following key heritage preservation components for education and celebration:
  - American Indian
  - Early European influences
  - Early farming and other industries
  - The manipulation of the Skunk River and Chichaqua's water management history
  - The story of rural life and Holy Cross Church
2. Integrate cultural celebration with experiential education at Chichaqua

## INTERPRETATION, EDUCATION AND RESEARCH

Provide unparalleled opportunities for ecological education, from immersive learning for elementary school children to meaningful research for doctoral candidates. In addition to the cultural pieces identified above, a host of opportunities to interpret nature exist here:

- Landforms and Geologic Composition of the Des Moines Lobe
- Area Flora and Fauna
- Water
- Climate Change
- Environmental Trends
- Recreational Experiences
- Wildlife
- Habitat
- Outdoor Skills-Building
- Invasive Species

1. Continue and bolster partnerships with colleges & universities, private NGO's and agencies at all levels as a means to further strengthen the science and natural area management research occurring at Chichaqua
2. Promote learning through volunteer stewardship opportunities in support of habitat restoration
3. Emphasize the water management educational opportunities ever-present at Chichaqua, in light of water quality and flooding challenges
4. Employ technology (smart phone apps, electronic guides, etc.)
5. Use the creative arts to strengthen the human / nature relationship
6. Promote Chichaqua as a resource of economic and ecological value



Interpretation example

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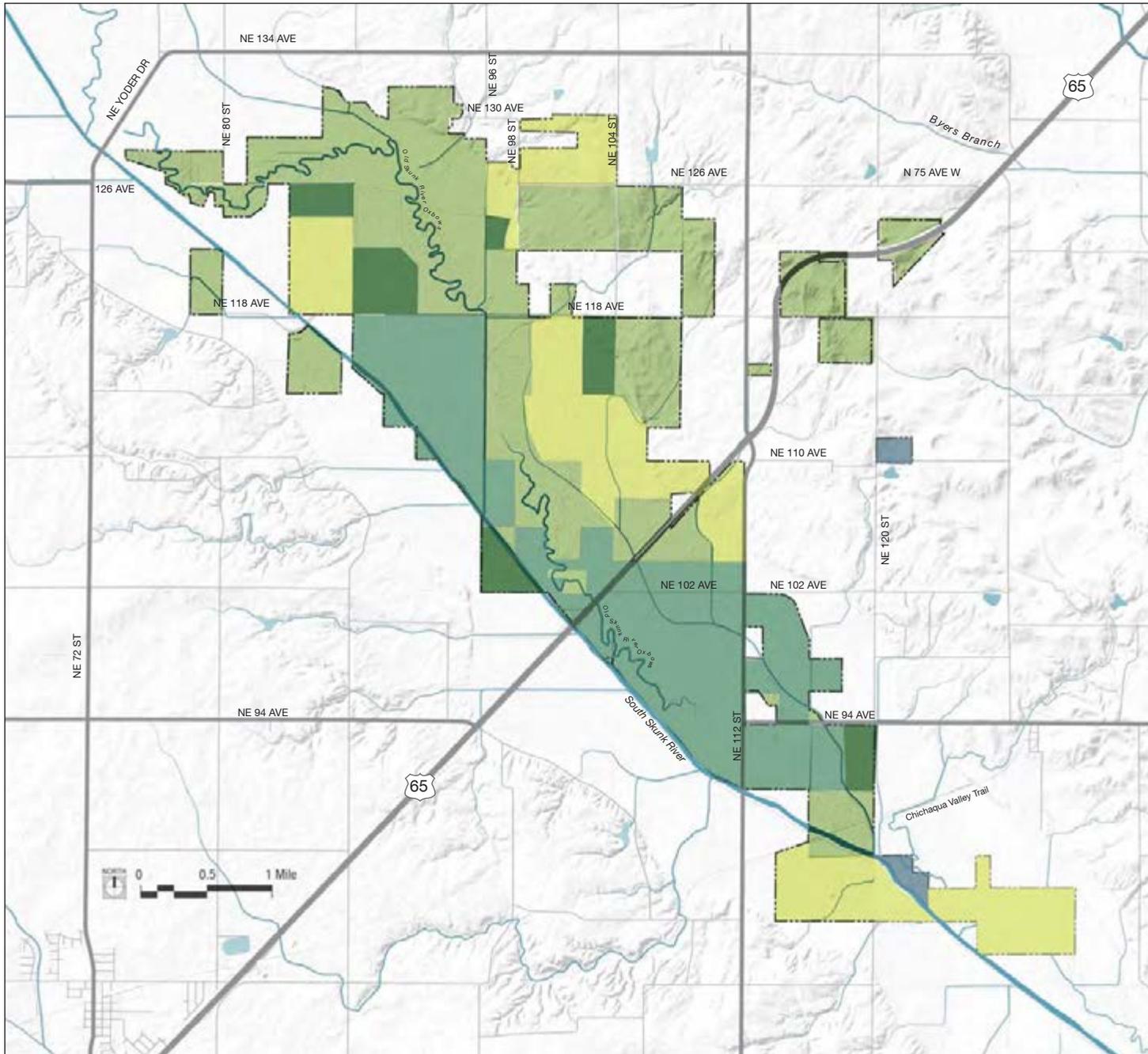


FIGURE 4.1  
Existing ownership partners

## Improve and Expand Partnerships

- Chichaqua serves as a study in partnerships, both internal and external. Multiple agencies own land or easements at Chichaqua.
- Agency goals and functions may not always be consistent, but a cooperative spirit largely thrives here.
- Similarly, landowners/neighbors often strive to support Chichaqua's conservation efforts.
- Still, Chichaqua faces an ongoing need for these various partners to understand each other. They must accept potentially conflicting goals, identify win-win collaborations and work toward consistent management.

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## HYDROLOGY AND WATER MANAGEMENT:

Improve water quality and manage quantity, in order to enhance the ecological and recreational value of Chichaqua’s hydrologic systems.

- Partner with landowners in at least one sub-watershed to implement best management practices and demonstrate the effectiveness of responsible water management.
- Without negatively impacting upstream landowners, seek opportunities to restore the flow of water through historic Skunk River meanders and oxbows.
- Improve ecological function, reduce sediment transport, and stabilize erosion in upland draws.
- Create new resources of permanent deep-water habitat.
- Establish a water quality monitoring program to demonstrate the efficacy of Chichaqua’s water management methods.
- Restore natural hydrology on future acquired lands through the breaking of existing drain tile networks and removal of ditches, where practically and legally feasible.
- Acquire properties when available, to create additional hydrologic connections and further opportunities for wetland habitat.



## FACILITIES/MASTER PLAN RECOMMENDATIONS

The strategic facility recommendations listed here are further demonstrated through the series of maps and commentary following.

### FACILITIES

1. Establish Chichaqua Station—a primary education and research center with flexible, multi-use spaces. This facility will integrate education, site, research lab, access to arts and social connections and provide a point of welcome to the park.
2. Disperse education hubs. These hubs should echo the aesthetics and expand program options presented at Chichaqua Station.
3. Expand footpaths for hiking, birding, cross-country skiing and snow-shoeing.
4. In particular, establish back-country walks of various lengths, as well as links and loops that do not sacrifice ecological integrity (see below)  
Note: Such a facility will need excellent way-finding/signage.
5. Expand footpaths for connections to key geologic features, select wetlands, hunting and viewing blinds, paddling course(s) and incoming education/research facilities.
6. Locate a gateway portal/bike oasis from the current Chichaqua Valley Trail as it passes through Chichaqua, directly connecting paved trail users to the larger greenbelt landscape.
7. Develop access without further fragmentation of habitat.
8. Remove or modify roadways that break continuous habitat.
9. Create lodging/support for unique experiential camping and riverside campgrounds.
10. Address/adapt the current built footprint of Chichaqua—the current site is well-used, but located in a zone prone to flooding. Secure additional land for future development so that facilities do not intrude on restored lands.
11. Establish a close-in, distinctive welcome portal, preferably in combination with Chichaqua Station (see #1, above).
12. Create appropriate-scale recreation destinations, e.g., expanded/accessible viewing/photo blinds and platforms, boardwalks and footpaths, labyrinths, fishing access, wildlife monitoring cams, elevated overview site(s), etc.
13. Improve and potentially expand scattered parking options.

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# OVERVIEW OF PROPOSED FACILITIES RECOMMENDATIONS

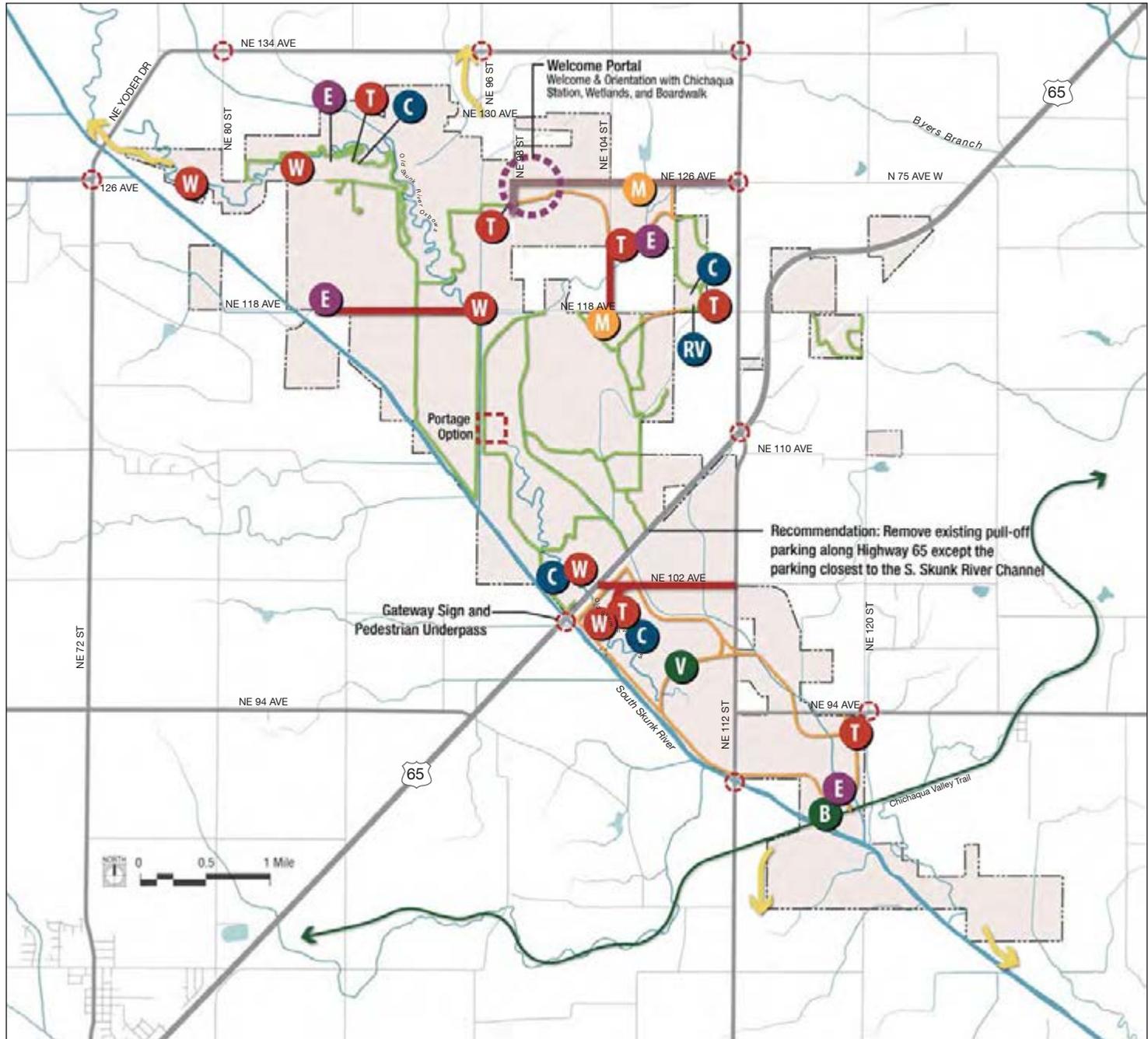


FIGURE 4.2  
Existing and proposed facilities



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## CIRCULATION OVERVIEW

Chichaqua's circulation system relies heavily on the farm-to-market roadways. Yes, we find the occasional government-issue gator and mowed footpaths continue to increase traffic, but mostly Chichaqua has relied on the car for connection. This access is not always compatible with Chichaqua's goals to return to a more wild character.

Fortunately, Chichaqua has also been at the forefront of the state's growing trails movement. The Skunk River water trail routinely delivers paddlers along Chichaqua's western fringe. The Chichaqua Valley Trail similarly takes pedals and pedestrians across the Chichaqua landscape.

In both instances, however, these pathways have not led to exploration of Chichaqua's interior. Instead, paddlers stay on the edge, while woodland buffers stop the cyclist from seeing the lands surrounding, let alone providing access.

The circulation system proposed here finds a more appropriate balance between auto, footpath, multi-use trail and waterways, while promoting pathways for exercise and exploration.

At the same time, we must set limits to accessing Chichaqua that protect the resource.

- ATV's or other off-road mechanized means are prohibited except when needed for ADA accommodation.
- Equestrian use is prohibited.
- Bicycles are only allowed on specified pathways.



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## VEHICULAR CIRCULATION

**RECOMMENDATION:**  
Long-term roadway management or modification to increase the mass of habitat tracts

- Greater access to the park from outside its boundaries through improved portals of varying scales, increased in number
- Improvements in existing parking areas, including associating them with an increased number of trailheads/footpaths
- Use of primary portals to achieve a sense of arrival and inform the user's overall experience

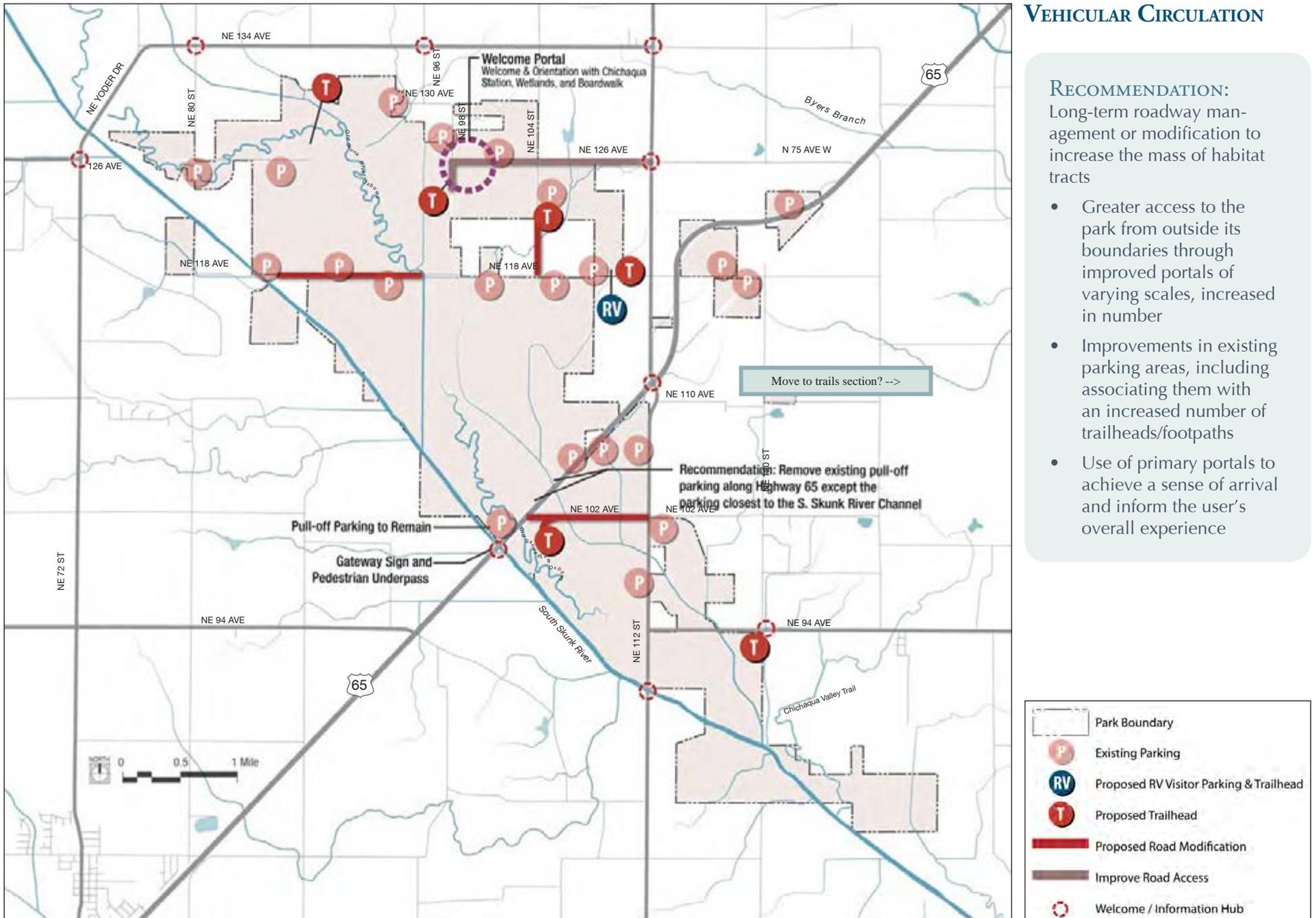


FIGURE 4.3  
Proposed vehicular circulation

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## TRAIL CIRCULATION

**RECOMMENDATION:**  
Develop a series of loops for increased safety and exploration of Chichaqua's interior

- Connect pedestrian paths to dispersed education sites and Welcome Portal
- Link footpaths and trailheads to enhanced parking sites (see Vehicular Circulation)
- Connect current Chichaqua Valley Trail users directly to the Chichaqua landscape for exploration and recreation
- Improve access to Chichaqua's interior for water trail users/river campers
- Fill-in "missing links" between existing footpaths
- Prepare to connect Chichaqua by multi-use trail to additional external trails
- Provide for improve/expanded trail crossings over waterways
- Connect north and south "halves" of Chichaqua through footpath under Highway 65
- Trailheads include appropriately scaled parking

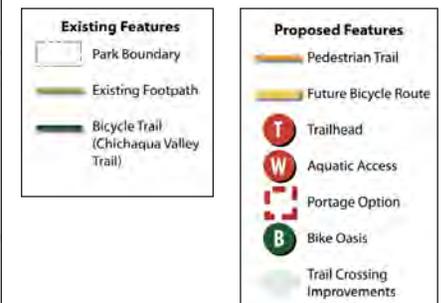
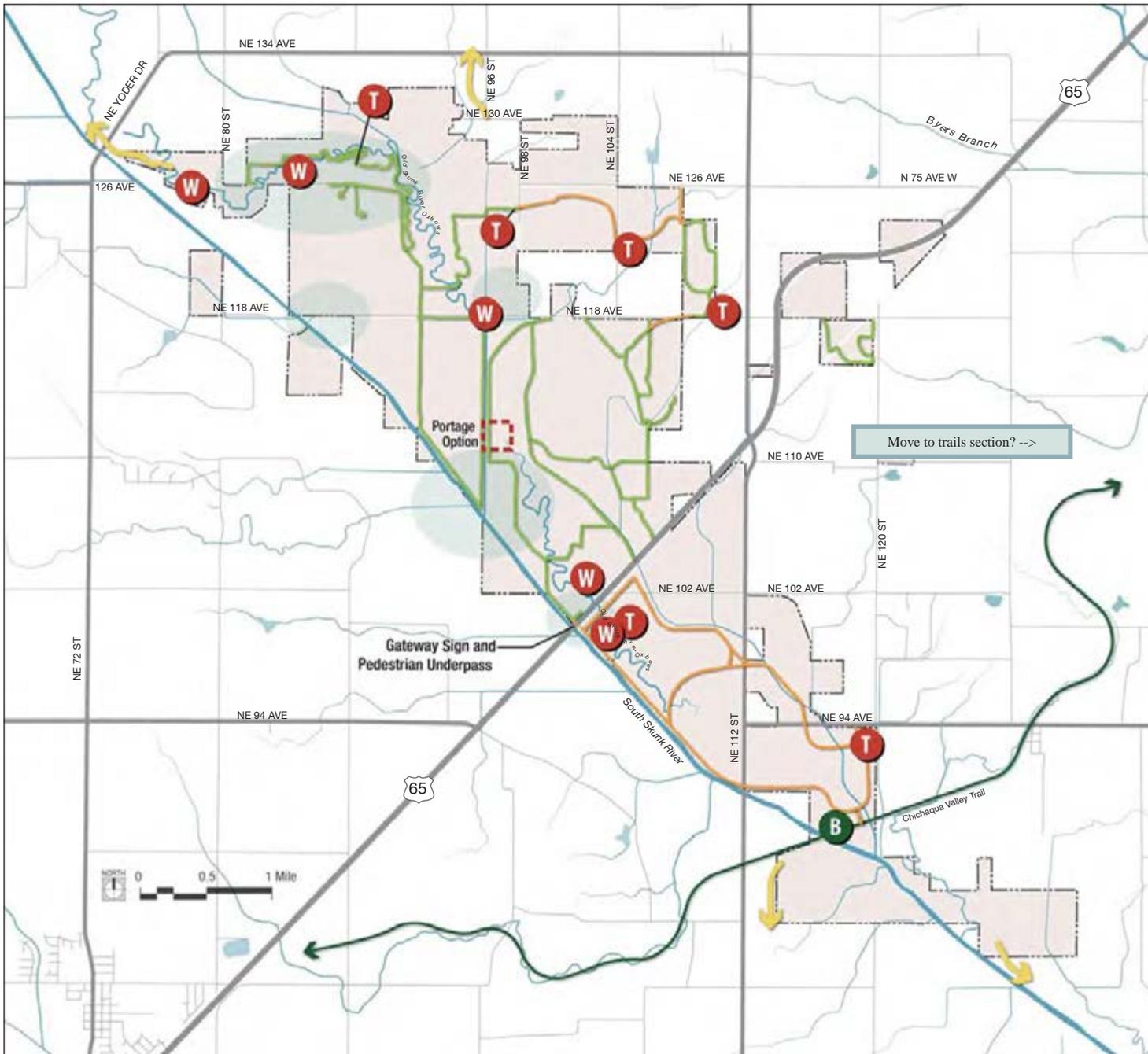


FIGURE 4.4  
Proposed trail circulation

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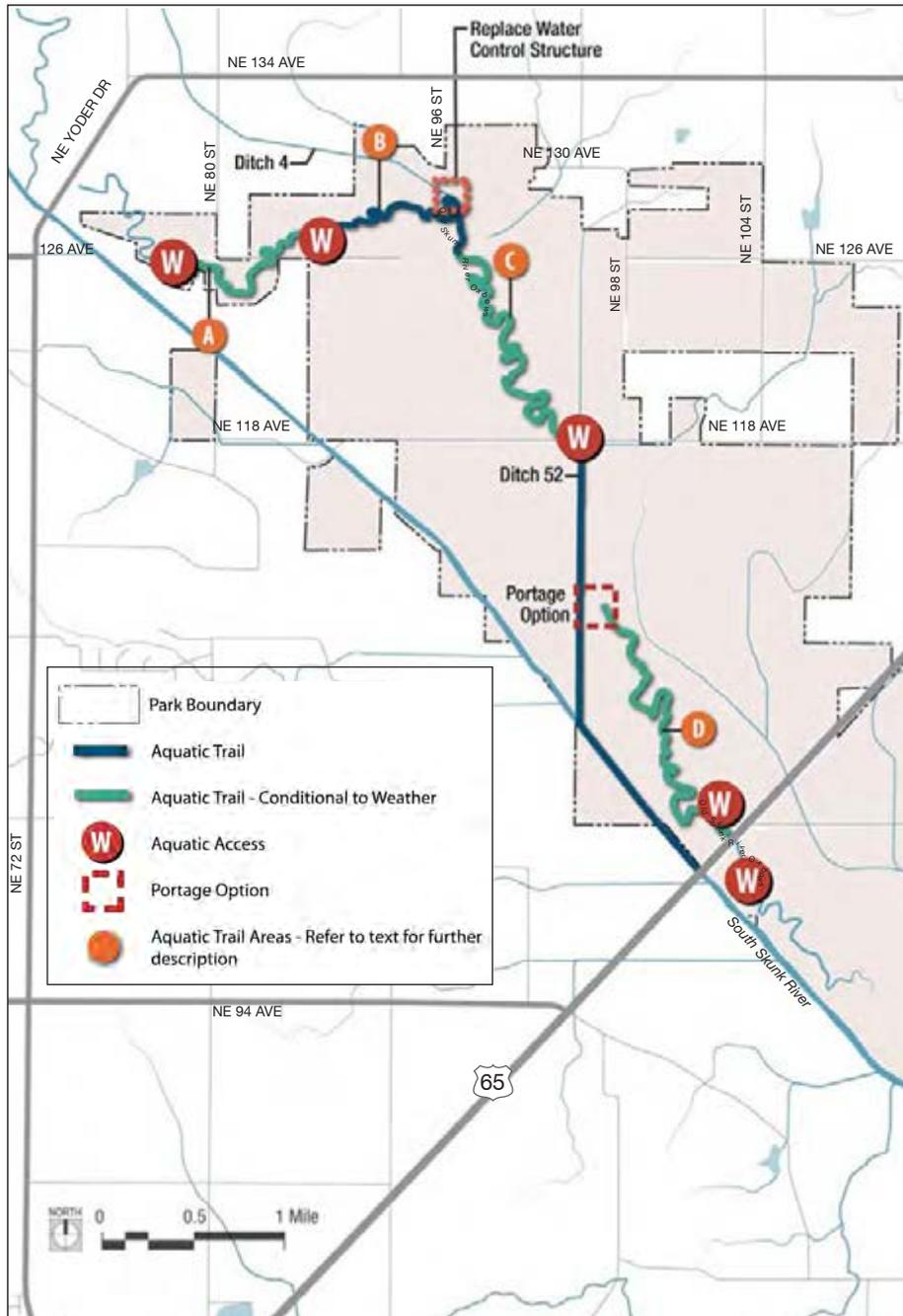


FIGURE 4.5  
Proposed aquatic circulation

## AQUATIC CIRCULATION

Paddling opportunities are limited at Chichaqua. Most of the old river channels are greatly diminished by siltation and obstructed by fallen trees. Some sections are too narrow for paddling, while others are a labyrinth of unconnected, dead-end oxbows. Area B, on the map at left, is presently the only paddling opportunity at Chichaqua. This area has been excavated and maintained for paddling. Although current does not flow through it, Area B offers about two miles of out-and-back paddling when water levels are sufficient. In dry years, even Area B may be devoid of water.

### NEAR-TERM RECOMMENDATIONS

- Expand paddling opportunities in Area B with minor excavation and clearing in select locations. This could provide up to a mile of additional paddling, and provide paddlers with better access to wooded sections of the historic river bottom.
- Replace the water control structure between Area B and Ditch #4. This structure is currently in disrepair, and may allow water to escape too freely from Area B.
- If a deep-water habitat area is constructed north of Area B, provide a short excavated channel to connect it with Area B.

### LONG-TERM CONSIDERATIONS

- The re-meandering of the South Skunk River through its ancient channels is practically and politically unfeasible.
- In areas labeled A, C and D, significant excavation and clearing are needed to restore the old channels as a viable and continuous paddling route. This work would be costly, and the resulting paddling route would require active long-term maintenance.
- Areas C and D could be linked via Ditch #52 if a water diversion structure and portage route were constructed as shown on the map.

Even with these improvements, paddling opportunities at Chichaqua will remain seasonal and dependent upon fluctuations in the water table.

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## WATER MANAGEMENT: QUALITY

Chichaqua receives runoff from nine watersheds, here labeled A through I. Soil erosion in these watersheds adversely impacts water quality entering Chichaqua.

### RECOMMENDATION:

- Establish partnerships with landowners in at least one watershed to implement best management practices and demonstrate the effectiveness of responsible watershed management.
- Watersheds C and D are the areas of greatest need, but partnerships in any of watersheds A through F would be beneficial.
- Restore natural hydrology on future acquired lands, as much as possible without adverse impact on upstream landowners.

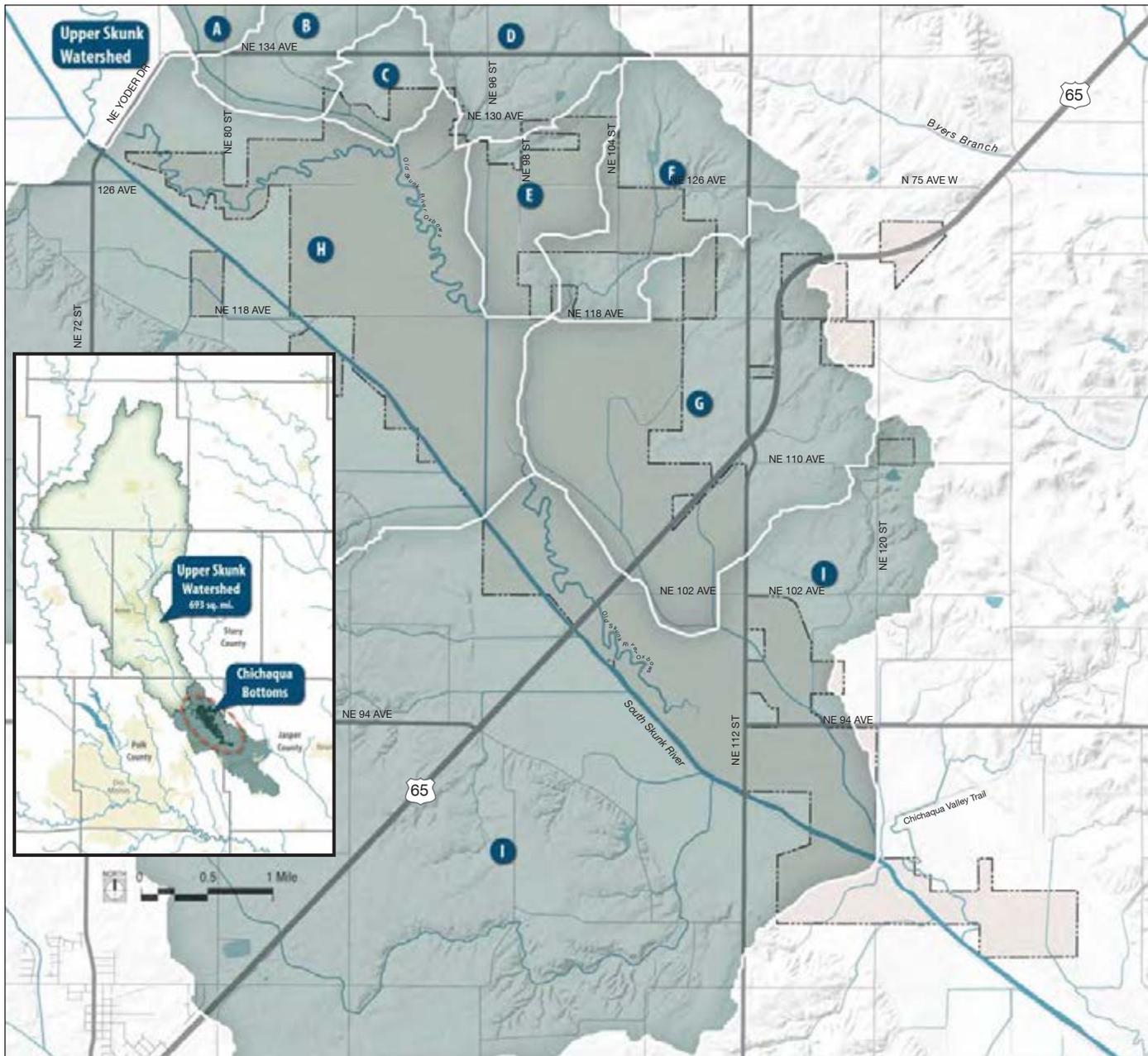


FIGURE 4.6  
Water management

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## WATER MANAGEMENT: QUANTITY

Drainage ditch networks and permeable soils limit the availability of water for wildlife habitat at Chichaqua.

### RECOMMENDATION:

- Without an adverse impact on upstream landowners, use water from the existing drainage ditch network to improve wetland habitat in the historic river channels. For example, it may be possible to divert a portion of flow from Ditch 52 east into the adjacent channels of the old Skunk River, and west to shallow wetlands.
- Excavate deep-water habitat in suitable clay soils between Ditch 4 and the historic oxbows

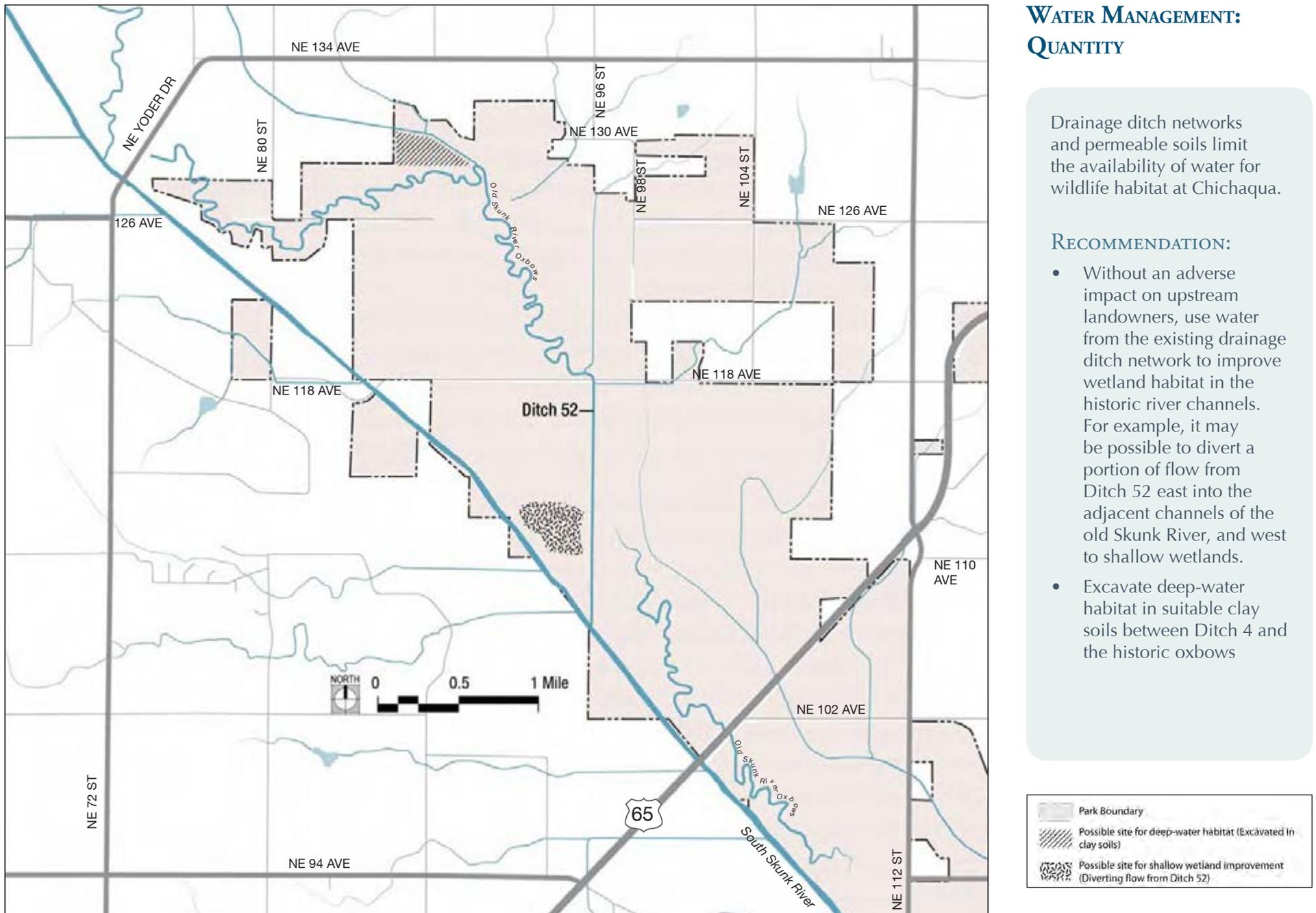


FIGURE 4.7  
[Water management]

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## EDUCATION

### WELCOME PORTAL WITH CHICHAQUA STATION

This plan recommends a welcome portal to the whole of Chichaqua that will orient the public to its exceptional:

- Habitat and recreation efforts
- Hydrologic status and history
- Cultural, social and archaeological story
- Recreation/exploration opportunities

At the same time, we see this portal also showcasing Chichaqua’s education and research mission through Chichaqua Station.

### CHICHAQUA STATION

We recommend a primary research and education facility here to parallel Chichaqua’s potential for world-class stature. Chichaqua intends to lead in context-sensitive restoration. Simple but effective facilities must support that potential. Science and restoration of the altered landscape is essential to Chichaqua’s success. Chichaqua already serves major universities well as a research site, but with no facilities designed to support these efforts, Chichaqua cannot fulfill its promise as a research and education resource.

We envision a facility built for:

- **Flexibility.** Research and education needs change with the assignments and the progress of Chichaqua over time. We picture movable furniture and equipment, adjustable storage, and infrastructure that anticipates growth and changes in technology.
- **Endurance.** At some point the mess of hands-on outdoor research and education gets tracked indoors. This facility will need to be accommodating and “built tough” with mud rooms and washable labs for washable kids.
- **Committed Workers and Interns.** Overnight stays of AmeriCorps teams or passionate researchers must be accommodated here. This also affords opportunity for artist residencies or other creative means of telling the Chichaqua story and providing educational options.

- **Technology.** Of the present and future. See Flexibility above.
- **Complementary Design.** This center proves most effective when it’s developed to complement the K-12 environment and other research/education institutions in the area. It’s conceived as the apex of an education triangle within the PCCB system (Jester Park and Easter Lake facilities anticipated) while also complementing labs, K-12 and other education/research institutions in Central Iowa.
- **Educational Site.** Chichaqua Station rests in a network of education-oriented wetlands/diverse habitats, boardwalks and viewing platforms.



FIGURE 4.8  
Chichaqua Welcome Portal and Station concept

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FIGURE 4.9  
Education Hub concept

Chichaqua has a diverse topography from wetland to dry sand prairie. Education about the diverse native landscape should take advantage of this wealth of outdoor learning environments.

#### DISPERSED EDUCATION

The Welcome Portal with Chichaqua Station is intended as a focal point—a true “You are Here!” indicator for the Chichaqua visitor and as a hub to satellite education sites dispersed throughout Chichaqua. With Chichaqua’s many ecological highlights, the whole education experience cannot be captured at one site. We recommend a series of secondary education hubs throughout. These can be used by classroom teachers and naturalists, scout leaders, other informal educators, resident artists and any visitors. With the advent of technology and interpretive signage at Chichaqua, this will give visitors of the future an enriched, comprehensive approach to knowing their Chichaqua.

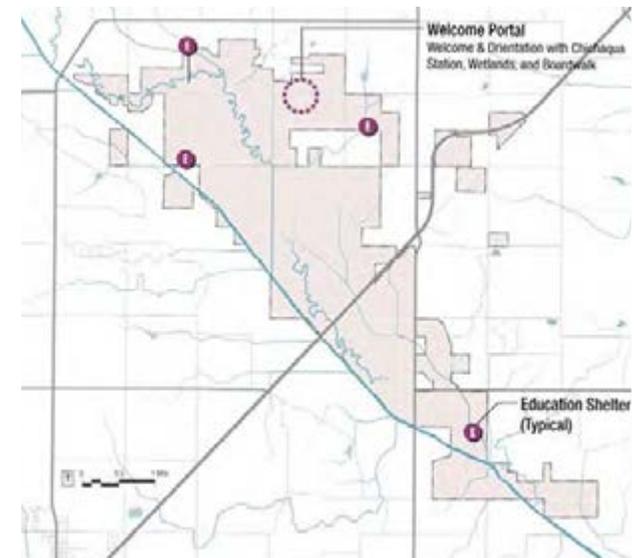


FIGURE 4.10  
Proposed Education and Welcome Portal Site

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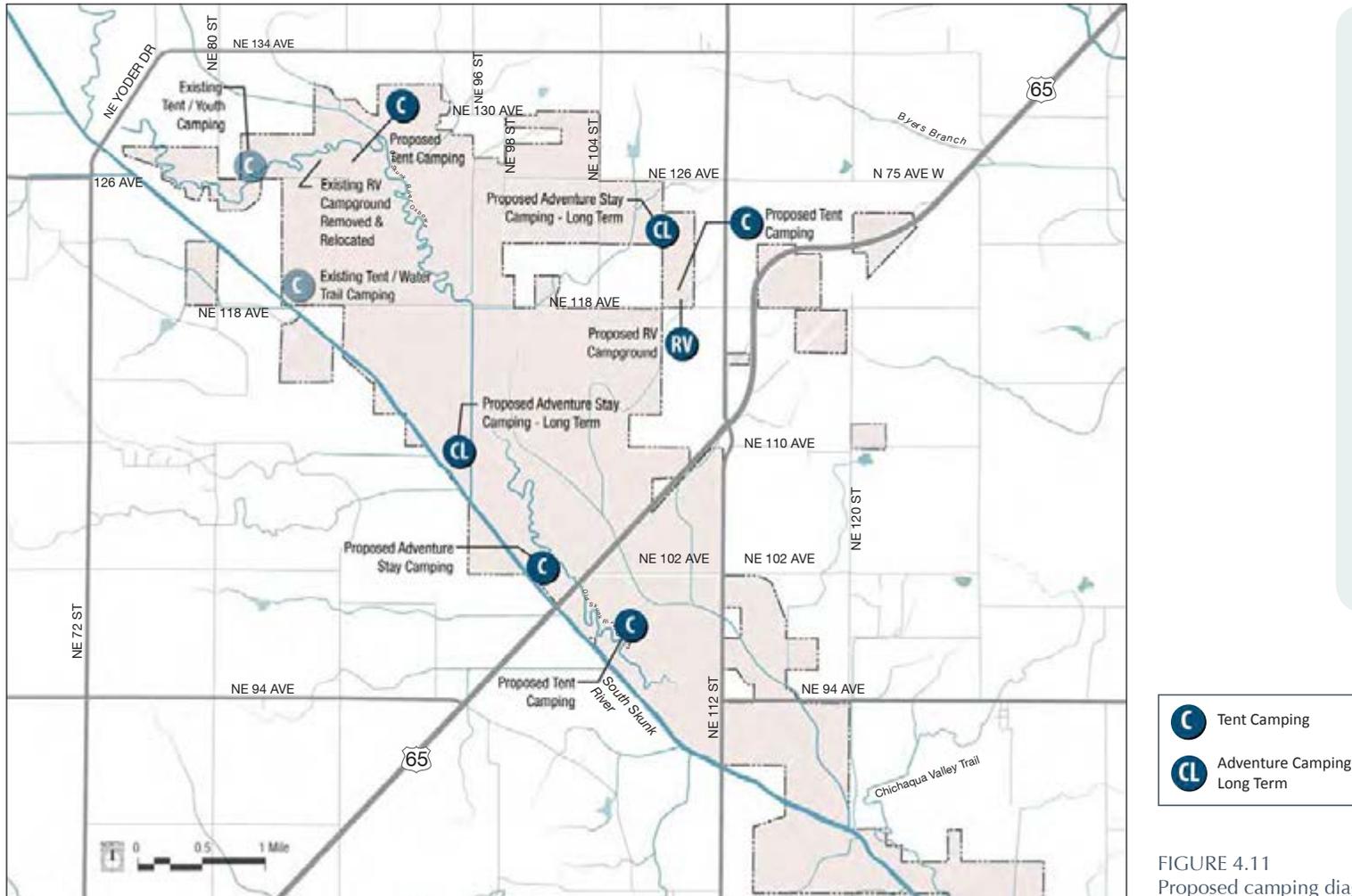
## CAMPING

### OVERNIGHT STAY

We anticipate relocating the current RV Campground due to flooding. This plan also recommends exploring more unique and culturally sensitive opportunities for overnight stay at Chichaqua, to complement the standard RV excursion. We envision true adventure stay here. While as always, sensitivity to landscape damage must remain the primary driver, adventure stay certainly shows great potential along some of the remnant meanders of the original South Skunk river and along Chichaqua's edge without necessarily interfering with the more pristine habitat tracts.

### YOUTH CAMPING

Chichaqua of the future provides a focus on youth in a concentrated area. Despite an obvious youth "zone," the scale of Chichaqua allows us to bring youth together without restricting their options for adventure. Instead, we increase the safety of hiking, paddling, camping and exploring Chichaqua for scouts, school groups, service clubs and others.



### RECOMMENDATION:

- Relocate RV campgrounds and maintenance facilities to sites that free them from the flood plain and developed in a manner that is supportive of the natural and restored landscape
- Create a focal point of youth activity at Chichaqua's NW corner, repurposing flood-prone facilities to support youth camping
- Add adventure camping into the experiential mix

FIGURE 4.11  
Proposed camping diagram

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FIGURE 4.12  
Adventure Camping—structural element/concept

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Document prepared by:

